Department of Health

Design guidance for new build and major refurbishment of facilities for the provision of primary dental care

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Design guidance for new build and major refurbishment of facilities for the provision of primary dental care

A report of a research project commissioned by NHS Estates from G&S Research in association with MARU, South Bank University, London

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Executive summary

1. There is a need for guidance for designing facilities for the provision of primary dental care, especially for new buildings, new provisions and major refurbishments. The majority of primary dental care is provided in converted domestic property that is more than 50 years old.
2. There have been significant changes in the scope and effectiveness of modern dentistry and these have brought demands to upgrade the facilities required.
3. The drivers for change include proposed changes in the delivery of care being investigated in the "Options for Change" programme, new dental techniques and changes in the roles of the professions complementary to dentistry (PCDs).
4. There is an increasing awareness in dentistry of the role that Government policy, through such initiatives as NHS Local Improvement Finance Trust (LIFT), can have on the provision of primary care facilities.
5. This research project has explored these issues and identified their impact.
6. The views of dentists, PCDs, patients, the dental trade and architects with a special interest in health and dentistry were canvassed in two focus groups and many discussions regarding how they thought the facilities for primary dental care should develop.
7. A wide variety of dental practices and access centres were visited and the facilities assessed, as well as the views of those who worked in them.
8. In future, dental facilities should be constructed with simple, uncluttered treatment rooms with no storage facility and minimal work surfaces supported by an adjacent preparation and sterilizing area.
9. Materials, instruments and equipment will be packaged in containers and passed into the treatment room via a "clean" portal and returned after use via a "dirty" portal.
10. There is a need to produce guidelines for dental primary care facilities that are comparable with primary medical care facilities, as in the future it is likely that the two will be in the same building in, for instance, "one-stop shops".

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1 Introduction

There is a current need for definitive guidance on the design of appropriate facilities for the provision of primary dental care, in view of all the changes in the provision of care that have been implemented in the last decade, and with the proposals being derived from the "Options for Change" programme. The last guidance, published more than 20 years ago and modified in 1993, was inappropriate even then, as it was primarily for hospital departments, and changes in the delivery of care had taken place that were not taken into account. There have been major changes in the scope and complexity of dentistry and the methods of delivery since 1980.

Over the next few years, much of the way in which primary dental care will be delivered may be subject to change, and the impact of primary care trust (PCT) commissioning of dental care is yet to be fully understood.

In a previous study (Morganstein, 2000) it was found that up to 80% of dental practices are in converted domestic property, and that makes it difficult or even unsuitable for change or expansion. However, when the opportunities arise for new provision or even substantial refurbishment, there is a real need for guidance to provide facilities that meet current and future needs.

Aim

To identify design principles for facilities used for the provision of patient-centred primary dental care in the general dental services.

Objectives

1. To identify future patterns of primary dental care delivery.
2. To identify design principles from aspects of healthcare, office and retail design that are relevant to the provision of primary care in the general dental services.
3. To create key design criteria for:
   a. dental practices in general;
   b. the clinical environment in particular.

Project summary

Facilities for the provision of primary dental care have developed over the last century in adapted domestic property, the design being led by the engineering needs of the equipment required to treat patients. There is currently no appropriate design guidance for patient- and operator-centred facilities for the provision of primary dental care. The aim of the project was to identify design principles from a wide range of sources and apply them to facilities for the provision of primary dental care in the general dental services. This will take account of current and future developments in primary dental care delivery and the perceived needs of dentists, their staff and patients. The methods used included establishing a relevant database from a comprehensive literature and information search, surveying dentists who applied for practice improvement grants, and in-depth case studies of new or refurbished dental practices. A widely-based focus group assessed all the available information and identified appropriate design principles which then led to the formulation of key design criteria for all aspects of general dental practices, including the clinical environment.

Study methodology

Focus groups: two full-day meetings were held at the RIBA to which dentists, architects, PCDs, representatives of the dental trade and other interested groups were invited. The group discussed various aspects of the current and future provision of dental care and identified drivers for change. A number of presentations were given on current designs and the implications of new technology on the design of facilities.

Interviews: informal individual and group interviews were held with dentists and other interested groups.

Study of published information: a large search for relevant literature was carried out and the information obtained incorporated within the study.

Practice visits: visits were arranged to a number of varied practices to investigate how they functioned and what design principles were used.

Questionnaire: 900 dental practices replied to a questionnaire on how they spent the Practice Modernisation Grant. This gave an indication of what dental practice principals thought their priorities were for upgrading their practices.

2 What is modern dentistry about?

The Government's policy has been to offer dentistry to the population as part of the National Health Service. However, with the Options for Change trials still under way into the provision of NHS dental care, there is no clear picture of the way in which dental care will be available under the NHS. From 2004 the responsibility for the provision of care passed to PCTs, which commission providers of dental care directly.

The response of the Department of Health to complaints about lack of access to NHS dentistry in some areas was to fund health authorities to set up access centres to provide emergency care and to offer routine treatment on a one-off basis. The access centres do not recall patients for routine check-ups but can offer comprehensive care in a primary care setting. The dentists providing the care are part of the salaried service and for the main part access centres are in newly-provided facilities. The access centres were a response to the reduced number of dentists who were prepared to continue providing comprehensive care under NHS terms and conditions, and this has led to an increased transfer to care under private contract. There has also been an increase in the number of dental facilities operating under the banner of the "Bodies Corporate". These are either in traditional locations where existing practices have signed over to one of the corporate organisations, or in new facilities in high street locations; some are within existing retail facilities. There has been considerable investment into these facilities over the last few years to convey a modern, caring atmosphere. There has been some rearrangement of company and practice structures in the recent past. Some dental care is provided under the NHS, but much emphasis is placed on marketing private cosmetic treatments.

There have been additions in the legal scope of work which the PCDs can carry out. Hygienists have an extended range of activities, including administering inferior dental blocks, taking impressions, and replacing crowns with temporary cement. Dental therapists are no longer restricted to working in the community and hospital services but can now work in dental practice, and will need appropriate clinical facilities.

Despite the increased emphasis on the prevention of dental disease in primary care and a significant reduction in the prevalence of some diseases, this is not a uniform reduction in disease levels, and in some parts of the country and in some communities, prevention strategies are not working to the same extent and treatment needs remain high. It is therefore essential that service provision in the poorer communities, with their different pattern of diseases, still has the ability to provide high-quality treatment while retaining an emphasis on prevention.

As well as the increased emphasis on prevention, there has also been a change in the attitude to dental intervention techniques by both patients and dentists. The introduction of adhesive dentistry, air abrasion techniques, lasers, implants and other innovative techniques and therapies has changed restorative dentistry, and there are equivalent changes in all aspects of dentistry. As well as the changes in the scope of dentistry, there is an increase in the range of the people who are availing themselves of dental care.

There are children who are conscious of their appearance and require prevention and possibly orthodontics. The elderly fall into two groups: those who have health problems exacerbated by growing old and for whom both access and therapy is a problem, and the growing number of fit elderly who will want to continue their dental care while presenting problems related to the longevity of their teeth. The impact of the Disability Discrimination Act 1995 (DDA) on public places, including the provision of dental care, will further change the type and location of the facilities required. Patients are much more aware of their surroundings, are unwilling to accept poor facilities and practices and have become more litigious.

The increase in the prevalence of known diseases in the population and the advent of newly-identified diseases has an impact on treatment options, as well as access and the potential for contamination in the dental facility. There needs to be an awareness of the impact of tuberculosis, HIV infections and all the viruses that cause hepatitis (A to F). There is also a significant increase in the number and severity of antibiotic-resistant organisms and their implications for patients and staff.

Undergraduate teaching in primary care

There has been a realisation by dental educators of the need to educate undergraduate dental students in primary care dentistry in a more realistic location than the dental school clinical environment. There are plans to create simulated primary care facilities, away from the dental schools, to provide the relevant experience.

Dental vocational training

After qualification all dental graduates undergo a period of vocational training, most of which is carried out in primary care facilities. The facilities are inspected on behalf of the Dental Vocational Training Authority and should allow appropriate supervision by the trainer.

Postgraduate work-based training

Postgraduate education has traditionally been based in the dental schools, and those courses with a clinical component have provided supervision mainly in a hospital location. Recently some Master of Clinical Dentistry (M Clin Dent) degree courses and those leading to specialist registration have part of the clinical supervision in a primary care setting, with supervision from the practitioner.

Clinical governance, monitoring and health and safety

The widespread implications of clinical governance and audit mean that procedures and facilities are much more open to scrutiny than previously. This may lead to changes to the facilities as a result of recommendations from audit studies and clinical governance activity.

3 Organisational principles of dental practice

As dental practice moves towards the modernisation agenda, practice premises will become more suited to accommodate modern dental primary care. The service delivery drivers will be improving access to care and creating a better patient experience. The key design drivers for change will be creating a better patient environment, developing more flexibility for future change in the accommodation provided and giving more emphasis to the concept of separation of public, patient and staff space.

Location and access

Dental practices have traditionally been located in older buildings and usually in former residential properties. Such properties have provided good access for some sectors of society, but not for all. New generators of development, such as the regeneration agenda and the primary care LIFT programme, may provide the opportunity for more purpose-built accommodation for primary dental care. Easily-accessible facilities for all sectors of society can be provided in such developments, in response to the Government's social inclusion agenda. Facilities shared with or adjacent to other primary care premises may also improve access. Ease of access from public transport networks is another aspect of the overall Government agenda.

As dental practice modernises, purpose-built premises will provide more convenient and flexible accommodation for primary dental care, which embraces the need for compliance with the DDA legislation for disabled access.

The overall shape of a development, the number of storeys and site density allowed, and the levels of parking provision will need to be established with the planning authority.

Patients' experience

The patient journey in a traditional primary dental practice organisation has been arrival at a formal reception area followed by progression to a waiting area and then to the dental treatment room. All the subsequent patient activity has taken place in this space, except when there is a need for more specialised radiography. The final part of the journey is to return to the reception area for payment and further appointments. Within this journey there has been little privacy for the reception activities at either the beginning or the end of the journey. All transactions with clinical personnel have been in a very clinically-oriented environment.

The new emphasis on the patients' experience of their healthcare intervention is leading to different ideas and concepts about the nature of the journey, the organisation of the practice and the role of the environment in which the activity takes place. Most patients do not find the experience of going to the dentist particularly pleasant, and for some patients the stress is so great that they require calming measures. To improve the experience, a number of drivers are emerging from policy, research and technological developments.

In future, as part of the social inclusion agenda, provision will be required in dental facilities for all special needs patients, whether they are children or adults who have mobility problems, hearing difficulties, visual impairments or psychological difficulties. Creating an environment that provides privacy and dignity for the patient will be paramount, whether this is confidentiality at the reception desk or meeting the clinical team for consultation in a less clinical environment than the traditional dental treatment room. Both acoustic and visual privacy will be concerns.

Research is showing that in all areas of healthcare the physical environment can be designed to improve patient outcomes. Environmental factors that can be shown to reduce patient stress will contribute to better outcomes in dental care. Children, in particular, need to be considered as clients with their own special needs. The child's experience of dental care is likely to influence their uptake and compliance with care throughout the rest of their life.

Patients with mobility problems need to be able to move around the building freely whether with sticks, walking frames or wheelchairs. Consideration should be given to the ease with which they can transfer at the appropriate moment to the dental chair. In some cases they may not

be able to move out of their wheelchair, so special dental chair devices will be required to place the patient in their wheelchair in the appropriate position for dental care intervention.

An extension of the patient journey is likely to be the provision of more patient information and education. Generally in healthcare delivery this is now considered to be the appropriate route to improving patient understanding of the treatment interventions, leading to better compliance with treatment regimes, which may then be continued as part of an individual's lifestyle.

Practice organisational issues

New ideas are emerging about the organisation of dental practice. New and innovative schemes are designed so that the patient arrives at a building which is not recognisable as a dental practice. In some practices the concept of a retail shop for dental products is seen as an ideal entrance, conducive to bringing patients into a dental practice while retaining a calm mood. A small, discreet front desk, which sustains the image of a clinical-free zone, is where a care nurse might greet the patient.

Dual circulation, with patients on one side of the clinical zone and staff on the other side, can achieve the separation of public, patient and staff space. Waiting areas with casual seating groups, where the care nurse and patient can communicate in relative privacy, or open-plan consultation areas outside the clinical space, will allow the patient to be in a more dignified, upright position during decisions about treatment options. This provides a warmer, calmer and less threatening environment, with no visible dental interventional technology that can be alienating and can increase anxiety during the consultation process.

The treatment room is now seen as a space just for dental intervention and not for storage or unnecessary equipment, thus reducing the clinical ambience to the minimum. The environment should distract the patient and alleviate stress either through a view from the window, pictures on the ceiling or walls, music or accessing entertainment through a television monitor.

Different types of dental intervention are undertaken by dentists and dental hygienists. There are two organisational ideas on room provision and use: either the treatment rooms are equipped for the specific service to be given; or all treatment rooms are equipped to the same level and the different specialists work interchangeably in the spaces. A development of this organisational idea is a patient-focused response: when a patient is to see more than one specialist, the patient remains static and the specialist moves to the patient.

The treatment room is no longer a place where decontamination should take place. All the equipment storage and processing of equipment can take place in a central space, with the treatment rooms planned around it. Used instruments, equipment and waste can be removed from each treatment room to a dirty reprocessing area. Having passed through a cleaning and sterilizing process, they can be held in a clean store. Dental instruments and clinical supplies are now arranged as tray sets for individual procedures and are placed in the clean store, ready for appropriate selection for the individual patient. Customised trolleys with instruments and equipment can be prepared for each patient in advance.

This organisational idea has several advantages. The surgery does not look like a clinical room on first arrival as little equipment is present, and it can also be smaller, giving space economies. Improvement in cross-infection control follows as there is far less opportunity for contamination within the surgery, with less to clean between patients. There is a likely saving in the number of instruments and the equipment required, as they are only in the treatment room when required for specific procedures.

Staff experience

There is a growing body of evidence that the physical environment in the workplace can have a positive effect on staff recruitment and retention. Staff work in the public, patient and staff areas, and these need to be physically zoned so that they have clear separation and are as discrete as possible. It is essential that patients do not stray into staff areas. A separate staff entrance might contribute to this separation and provide staff with some personal privacy. All staff workspaces should ideally have natural lighting and ventilation. Where this is not possible, good artificial lighting from more than one source and locally controllable ventilation systems should be provided. Staff should have proper breaks during the working day, which can only be achieved through separate dedicated rest room areas where they can relax away from the work situation. Access to outside space is desirable.

4 Design needs of activity spaces

Public spaces

Arrival

Access to the site should be organised for pedestrians, cyclists, cars, deliveries, and refuse-collection and fire-fighting vehicles. Ideally, the entrance should be clearly visible from the street, but clearly signposted entry to the site and the building for all users should also be provided. While this must be barrier-free for disabled users, security measures might be required in some locations.

Disabled drop-off and parking should be provided close to the entrance. The number of car parking spaces for patients and staff will have to be agreed with the planning authority, taking account of any green travel plans. External storage will be required for clinical and domestic waste and for bicycles, taking account of access for service vehicles; and landscaping of external spaces can contribute to the desired caring and relaxing ambience.

Entry

The entrance should be clearly visible for patients arriving on foot or from the car parking areas, giving a feeling of safety and security. It should be barrier-free to ensure ease of access for wheelchair patients. The entry system will probably involve access through a locked door. Access to the bell system should take account of patients who are deaf, blind or wheelchair users. Consideration should be given to access for guide dogs accompanying blind people.

Reception

Immediately on entry it should be obvious to patients where they will be received. This activity may very low-key, providing an ambience that is friendly and inviting but with a sense of privacy and confidentiality. It is essential that discussions can take place in reasonable privacy. To achieve this the two activities of receiving patients and arranging telephone appointments can be separated with the use of IT systems. Telephone appointments can be handled in a more confidential way in an office environment, which also obviates the need for a telephone to be part of the reception activity.

Further appointments at the end of the visit can be made as part of the reception activity or can be handled by the care nurse.

There must be security and confidentiality for financial transactions, but increasingly payment is made by card, with less need for cash storage. A low-level surface rather than a high counter is more friendly and accessible. In localities where staff feel vulnerable, a wide, low surface forms a good barrier and can be supported by a panic button.

Increasingly, dental retail display and sales are provided as an amenity in the public space and also to reinforce good oral hygiene habits. The display of products should be accessible to all users and could replicate a shop style of provision.

From the staff point of view, however the reception activity is arranged, there must be good control of the entrance and supervision of public areas.

Patient education

There are two strands of activity to consider around patient education: children and adults. The main educational thrust for children is training in proper teeth-cleaning methods. This is usually undertaken by a dental hygienist in a treatment room or in a special facility, although preventative dentistry units were first installed in the 1970s and have been removed in the vast majority of practices and replaced by a small in-surgery sink/mirror unit. Adult education has a new thrust, as it is considered that there is better patient compliance and recovery if the patient understands more in advance about what is going to happen. There are now educational materials for patients on major procedures, such as root canal fillings, which can be accessed by video, CD-Rom or on computer. Facilities for accessing information can be provided in a fixed location adjacent to the waiting area or through a mobile source such as a laptop computer. In practices with a care nurse, this information is likely to form part of the discussions with the patient and may be accessed together with the care nurse.

Waiting

If patients have to wait, their anxiety level is likely to increase. Where the organisation is based on care nurses, patients are less likely to wait but are more likely to be in discussion with their care nurse from the time of their arrival. Where patients do have to wait, the environment can provide ameliorating features such as comfort, distraction and an outside view. Different seating types will suit different users, and a variety of styles of chair is suggested, including chairs of different heights, with and without arms. There should also be space for a wheelchair. As a contribution to the relaxing atmosphere, minimum refreshment of drinking water should be provided and a tea and coffee tray considered. The ambience of a sitting-room is the aim in many facilities.

The provision of children's waiting activity should appeal to young children but also to older children, who might use the IT facilities associated with patient education. Any area for younger children should be observable from the adult waiting area and should be away from the entrance or staircases.

Amenities such as secure storage for prams and pushchairs should be provided. Consideration might also be given to storage for overcoats and umbrellas. Easy and discreet access to WCs should be provided, including for disabled patients. In other health facilities two disabled-access WCs are increasingly provided, with or without gender separation, on the basis that the same space is required as for two ambulant and one disabled WC. Consideration should be given to providing baby-changing facilities in one of the WCs.

Patient movement around the building

Easy circulation is required in all the public and patient areas of the building, taking account of the needs of all disabled patients. Wheelchair access requires manoeuvring space and lower controls for everything an ambulant patient would be expected to undertake. Hearing loops should be provided for deaf patients and Braille controls for the blind. General disability in terms of physical strength should be considered in, for example, the weight of doors to be opened. Where accommodation is on more than one floor, lift access will be required, with low-level controls for wheelchair patients and Braille controls for the blind.

Clinical spaces

Dentists traditionally work in the "surgery", but to align dentistry with other primary care facilities the use of the term "treatment rooms" has been adopted.

The activities that have to take place within the treatment room are all patient-centred; all other activities can be displaced to non-treatment space. Thus only those care activities which are carried out by clinical personnel, supported where appropriate by dental nurses or other complementary staff, need the controlled environment and specialised equipment and services provided in the treatment rooms. The same basic facility is appropriate for all aspects of primary and most specialist care, although specialist equipment such as operating microscopes may require additional space (especially when not in use). There is, however, a need for additional clear space around the patient couch when sedation is used and when oral surgical procedures, such as implant placement, are carried out. This is due to the additional patient monitoring and specialist surgical equipment required for these procedures.

The introduction of digital technology, especially radiography, has meant that the current requirement of an intra-oral machine, a film processing unit and a film viewer have been replaced with a low-output intra-oral unit, a sensor unit, a computer to process and manipulate the data and a monitor to view the radiographic image. The placement of this and other digital technology requires the same consideration as any other equipment with regard to ergonomics and contamination control.

Workflow and space for dentist/hygienist

Both dentists and clinical auxiliaries (hygienists and therapists) need to be within easy reach of their patients while sitting comfortably, avoiding back and neck strain. Patient couches should be able to be positioned in an infinitely variable number of ways to allow the operator and assistant suitable access. The operator's space or zone needs to be large enough to allow them to greet a patient while still keeping essential equipment and supplies within easy reach. Clinical activities are dynamic, and the operator's zone needs to be large enough to allow unobstructed movement within it. This may necessitate having equipment that can be easily moved into a "parking" zone. The operator's zone is an ellipse starting to the left of the patient's head and finishing beyond the patient's right hand; it has a minimum dimension of between 65 cm and 80 cm.

Workflow and space for dental nurse

The dental nurse has to be able to assist the dentist while sitting comfortably and in a stable position on a chair that allows a clear view of the operating area. This will be approximately 15–20 cm higher than the operator. At the same time the dental nurse will need to have access to the instruments and materials required for the procedure

being carried out. The level of involvement of the dental nurse in the procedure, for example changing burs in the dynamic instruments or use of the three-in-one syringe for cavity washing and drying, needs to be identified and pre-programmed into a working pattern. The dental nurse space or zone will need to complement that of the operator. The dental nurse's zone is an ellipse starting to the left of the patient's head and finishing beyond the patient's left hand; it has a minimum dimension of between 65 cm and 80 cm.

Space for patient, space for escort

Patients need to have easy, unfettered access to the treatment room, with space to manoeuvre wheelchairs or walking aids if required. Access to the patient couch from the side should be unobstructed by trailing or fixed cables, and ceiling-mounted equipment should be well above head height (patients may exit from the couch when it is in a raised position and are then vulnerable to high-level fixtures). When welcomed into the treatment room, escorts and parents/carers need to be accommodated where they can provide support to the patient but not interfere with the function of the space. The access should be easy and unfettered and the chair should be comfortable and supportive. If the chair is on wheels or sliders these should be lockable.

When patients need assistance in getting onto the patient couch there needs to be clear space for additional equipment, such as hoists. Alternatively, staff need to be able to assist without risk to themselves. A patient who cannot be removed from their wheelchair for treatment may require special equipment to restrain and position the wheelchair.

Equipment and furniture needs/sizes

The minimum complement of equipment currently required for primary care, carried out by either a dentist or a PCD with or without the assistance of a dental nurse, is a system for the delivery of dynamic instruments using a non-mains water supply; high-volume aspiration; a means of illuminating the oral cavity (usually a dental light, ceiling-, wall- or chair-mounted); and a work surface or tray holder on which to place instruments and materials. This should be within easy reach of the operator or assistant. The operator requires a supportive, movable and adjustable chair to sit on and the assistant requires a similar chair but with the ability to be raised 15–20 cm above the operator. The patient couch should be adjustable to allow the patient to be placed in a position that is both comfortable for the patient and allows access for the operator. Some patient couches have a starting position similar to an armchair and recline from there, with the leg support initially bent and straightening out as the backrest drops. This has the advantage of a reduced footprint and allows easier access for patients. All patient couches should have a thin back, and be wide enough for patient comfort but narrow enough to allow both operator and assistant to be seated close to the patient. Unless a sink for hand-washing can be placed very close to the treatment room, where access can be obtained without risk of contaminating door handles or other furniture, a sink has to be included in the basic arrangement. As the range of procedures increases, so supplementary items of equipment will be added to the minimum set-up.

Intra-oral radiographic equipment needs to be available close to the patient while keeping in mind radiation protection for staff and patients, and even those in adjacent rooms. The need to have appropriate viewing devices within easy sight of both operator and patient is essential.

The inclusion of storage cabinets and work surfaces within the treatment area, while traditional, only adds to the clutter and increases the potential for contamination, and can only be recommended if no other location for storage can be found. The actual need for work surfaces in primary care and most specialist care is very small and can be met with the option of either a free-standing movable trolley or a platform cantilevered into the operator's or dental nurse's work zones.

Services required in spaces where there is clinical activity must meet current regulations. Clean and dry compressed air, vacuum for aspiration (with amalgam separation), water and electrical supply need to be provided at appropriate locations in the treatment rooms. After a risk assessment of security needs it may be reasonable to fit personal attack alarm buttons in some or all of the clinical facilities and public spaces.

Computer wiring (although secure wireless links now make this less necessary) and piped gases, especially oxygen, may also be stipulated.

Imaging

The advent of intra-oral digital radiographic imaging has made a fundamental difference to the use of radiographs in dental practice. The ability to obtain an instant picture, be able to manipulate it, store it on the computer and even print out a copy for patient education has enhanced an already essential tool. The fact that all this can be achieved without the need for film processing units that produce waste that needs to be stored and disposed of with care is a bonus. However, the use of digital technology for extra-oral radiography is in its

infancy and the costs are high, which will mean that the conventional methods will be in use for some years to come. This means that there will still be a requirement for a separate room for the foreseeable future for extra-oral units and film processors, with appropriate radiation protection.

Patient distraction

There are several recent innovations that can help distract the patient from the activity within the treatment room. Sedation of the patient with intravenous drugs or an inhaled gas combination gives a sense of euphoria and amnesia. Both methods of sedation require the use of equipment and staff for constant monitoring of the patient's vital signs and have space implications for both equipment and personnel. Other methods of distracting the patient are either passive or active. Passive distraction is positioning within the patient's vision range a picture or light "show"; these may be placing a map or puzzle picture or projecting a slide show on the ceiling.
A television screen can be placed so that the patient can view broadcast or video programmes. The patient can use a remote control to change programmes as they wish. The use of music as a distraction or to create a calming atmosphere is widespread, and patients can be supplied with headphones to add to the privacy of the music; however, the headphones have to be small enough not to interfere with the operator or restrict the position of the patient's head during treatment. The use of DVD glasses to occupy a patient during long procedures, again with active control of content by the patient, is a means of distraction. However, some operators believe the lack of eye contact with the patient removes a valuable feedback mechanism on the physical and emotional condition of the patient. Their bulk also is seen as a disadvantage. However, basic noise abatement design and practice in the treatment room and minimising interruptions are essential.

Right- and left-handed operators

Much of the dental equipment (dynamic instruments) available can easily be adapted for both right- and left-handed operating, and with the increased flexibility in the way treatment rooms are scheduled, simple switching is a necessity. Some left-handed operators work in a mirror image of the work zone of the right-handed operator, while others manage with minor adjustments of instrument positioning. The assistant may have to adjust position for an unobstructed view and consequently may have to move instruments, materials and the high-volume aspiration unit in order to function ergonomically and comfortably. This can easily be accomplished when using a trolley-based system, but may require more space on a fixed work surface.

Lighting

The variation of lighting levels within the treatment room can be considerable, with the dental light, lights attached to instruments and ambient lighting all at different levels. Levels need to be suitable for their function, and grading between different areas needs to be carefully planned to achieve smooth changes. The type and levels of lighting in other areas should be carefully planned to enhance the comfort and function of the facility. All individual areas should comply with the relevant guidelines.

Staff spaces

Administration

Staff spaces need to be separated and have restricted access from the public and patient spaces to provide security and confidentiality for the non-clinical activities.

Office work spaces will be required for the management of NHS processes and dental practice activity. Office spaces and individual workstations might be dedicated or shared. Some activity, such as new appointment booking, will be dependent on the telephone but might in future also be handled by email or a text phone for deaf patients. Quiet working areas will be required for some tasks, and private areas for staff management and interviews. The workstation areas will need the resource of a shared space for printers, photocopiers, scanners, fax, post etc.

Records and IT

Records can be divided into current and archived records. Patients' records must be kept for at least 12 years after last attendance (although the protection societies are now recommending that patient records should be kept forever. It is acceptable for them to be microfilmed or scanned and stored electronically provided that they are traceable and can be printed out). This forms a considerable bulk when they are paper-based. Current paper records must be easily accessible while being housed in a secure and confidential area. Records are increasingly being computerised, which cuts down the storage space requirement for current records, but it will be some years before archive record stores can be eliminated. The implications arising from computerised records can be developed through a networked system throughout the building with either cabling or wireless systems, so that a patient's records can be accessed and added to in either reception or the treatment room, or by the care nurse using a laptop during a patient discussion.

Back-up systems to outside storage sources are easy to arrange; these will then form the archive records of the future.

Decontamination

This area processes materials from "dirty" to "clean" and should be strictly zoned into three areas: washing, sterilizing and clean storage, with a very clear workflow between them. Dirty and used materials from the treatment rooms should be collected in the "dirty" area. Items for disposal should be placed in appropriate containers for sharps, clinical waste and domestic waste. Instruments for reprocessing should be hand-washed before passing through an ultrasonic cleaner. Equipment should be cleaned according to protocols. The instruments and suitable equipment are then sterilized in an autoclave. Instruments, clean supplies and materials are then packed into procedure-based tray sets and stored for future use. This area will require clinical hand-washing facilities and space for larger trays or trolleys to be set up for each appointment.

Storage requirements

Dental models are quite bulky and need storage with reasonable access alongside patient records. These should be kept for at least 12 years in the case of models used for the production of devices such as crowns and dentures, but indefinitely for those related to orthodontic treatment.

Supplies divide principally into clinical items and office/stationery items. Clinical materials/consumables, water, instruments and equipment will need to be stored adjacent to the clinical and reprocessing/decontamination areas. Stationery and office supplies will need storage adjacent to the administrative areas.

Dental practice generates clinical waste, and the health and safety rules will apply. Provision must be made for secure disposal holding for both clinical and domestic waste, which can also be accessed by the refuse collection services.

Cleaning

A cleaner's room or storage area will be required.

Staff amenities

Staff change

Practice policies will vary on the uniforms or gowns that will be worn for clinical activity and whether they are worn outside the practice on journeys to and from work. A key policy will be the responsibility for laundering of these items. Many practices prefer to keep clinical uniforms and gowns on site and to launder them in a dedicated utility room. Whichever system is selected for uniform management, there will be a need for changing facilities and lockers for outdoor clothes and handbags etc. Staff will require WC and washing facilities, and in line with encouraging cycling as a means of transport, showers are increasingly being provided.

Rest rooms

All staff should have access to beverages during the working day. Consideration should be given to the provision of rest rooms so that staff can have proper breaks away from the workplace. Usual facilities in such rooms are coffee, tea and snack preparation, refrigerator, microwave and washing-up facilities. There is a school of thought that a small dishwasher is a hygienic system of managing washing-up and prevents the spread of staff illness.

Staff development

Staff require a quiet study area with access to paper and digital information sources for informal continuous professional development (CPD). They will also be required to attend more formal sessions, which will necessitate a larger space. The waiting area might be able to be used for such activity; alternatively a larger room can be provided which can be used interchangeably for training and practice meetings.

Engineering issues

The recently published update of Health Technical Memorandum 2022 Supplement 1 'Dental compressed air and vacuum systems' provides useful information on the design, installation and maintenance of the engineering systems required in a dental facility. All such systems should be installed in well-ventilated housing with soundproofing of a standard high enough to prevent sound and vibration intrusion into the facility. Installations must meet all appropriate regulations and guidelines.

Amalgam retrieval

Evidence shows that dentistry's contribution to the amount of mercury in the environment is negligible (Association of Metropolitan Sewerage Agencies) and that amalgamation produces a very stable form of mercury. It does not readily convert to methyl mercury, which is the form that is found in river and sea-water sediments and is absorbed by fish and hence into the food chain. However, dentists should do all they can to protect the

environment, as mercury from dental use can end up in water from direct deposits of waste amalgam and from incineration of clinical waste and from crematoria. Dentists can control the first by preventing amalgam from entering the waste water system (it is very difficult and expensive to remove it from the water-processing plants). The second can be achieved by separate processing of mercury-contaminated clinical waste. The discharge from crematoria will continue as a problem until amalgam is no longer used as a restorative material.

Waste amalgam can be removed from material aspirated from the mouth using special amalgam separators placed in the waste line. The chairside traps and vacuum filters are adequate for trapping large particles, but are not fine enough to remove small particles in suspension. Amalgam separators use one or more of the following technologies: sedimentation, fine filtration, centrifugal force and ion exchange. The safe removal and disposal of the separated material is an essential part of the process. Amalgam separation units need to be plumbed in carefully and, as the units are both large and have an impact on waste water flow, there are location and space implications.

Appendix 1

Case studies

Nine primary care facilities in England were visited and are described and commented on in the following reports.

The facilities were:

Beaumont Practice, Oxford

Blandy House, Henley-on-Thames

Ship Street, Brighton

Chiltern Dental Centre, High Wycombe

Craig House, Banstead

Hampstead Health Care, London

Ringley Park Dental Practice, Reigate

Southview Dental Centre, Edenbridge

The Avenue, London

Beaumont Practice, Oxford

Location, site, context

This practice, which was established 56 years ago and no longer sees patients under NHS contract, is housed in three floors of an 18th-century Georgian house in central Oxford. One dentist works four days a week and four others work between a day and a day and a half each. A hygienist is present part-time. There is one receptionist and a practice manager. There are approximately 4000 active patients seen. The practice has no parking facility, and staff and patients use public transport or nearby public car parks. The entrance is in a side street with one step up to the door, although a ramp is available for those who require it.

Organisational concept

Patients and escorts arrive and are admitted after identifying themselves with reception via the entryphone, and then register at reception. About 2000 current records are stored in an unlocked cupboard in reception, with the remainder stored in the basement. The patient waiting area is adjacent to the reception desk. Patients are called into treatment room one but are escorted to treatment room two by a dental nurse or the dentist. Patients return to reception to make further appointments and for financial transactions.

Comment on patient experience

Patients attend the practice because of its reputation and do not mind the difficulties in travelling and parking. At the moment all patient facilities are on one floor, with the exception of the patients' WC, which is up some stairs on a half landing. The waiting room is small and it is difficult to maintain confidentiality.

Public spaces

The reception desk, which allows a seated receptionist to see patients, is situated to the left of the corridor leading from the entrance door; it is an integral part of the small waiting room (10.2 m^2), which has one settee and three chairs (five seats in all) and some low-key marketing of oral hygiene aids. Despite the close proximity of the two treatment rooms there is no noise heard in the waiting room. There is a small hall between the ground-floor rooms, and stairs up to the half landings and down to the basement.

Clinical spaces

Treatment room one (11.9 m^2) is a small room which has a window behind the dentist and an alcove which incorporates a seat for accompanying persons. The L-shaped cabinetry is behind and to the right of the dentist's seat. The dental light, the spittoon and the suction heads are chair-mounted on the patient's left. There is also a small movable work surface for the dental nurse to use. The dynamic instruments are on an arm attached to the cabinetry on the dentist's side. There is also an operating microscope attached to the same work surface. When not in use the microscope is retracted over the work surface; however, it still dominates the small treatment room. The intra-oral radiography unit is attached to the wall on the dental nurse's side. There is a sealed wooden floor in the treatment room, and lighting is from one high-intensity uplighter and six halogen spotlights on two rails over the work surfaces. The light levels are uneven, and the nurse's working area is less well illuminated than the rest of the treatment room. As well as access to the waiting room there is access to the small adjacent preparation room.

Treatment room two (15.5 m^2) is a long room with a high ceiling and access from both the hall and the preparation room. The cabinetry is split into two units, one L-shaped with the long arm on the dental nurse's side and a separate unit fixed to the wall on the dentist's side. There is also a high-level cupboard above this unit which incorporates work surface lighting. The gap between the two gives access to the Belmont dental chair. The space between the rear wall and the back of the cabinetry contains a desk and also acts as an equipment store. The dental light and the radiography unit are fixed to the wall and the dynamic instruments are on the dentist's side. There is a sealed wooden floor and the lighting is entirely from uplighters. The dentist also has a mobile store trolley that contains clinical items.

Support spaces

The main clinical support space is a room (6.8 m^2) between the two treatment rooms which contains ultrasonic instrument baths, two autoclaves and washing sinks. There are also cupboards for the storage of clinical materials and instruments. There is a sealed wooden floor and ceiling fluorescent lighting. There is no window, and access is only from the two adjacent treatment rooms.

There is a redundant dental laboratory in the basement which is used by the dentists for denture adjustments.

Radiography

Both treatment rooms have film-based radiographic equipment, and an automatic processor is housed in a cupboard on the half landing. Treatment room one has a limited capacity to develop film in the room when needed.

Administration spaces

There is no separate office, but the basement staff room can be used when needed.

Staff spaces

There is a staff room in the basement, but no secure lockers for staff to use. There are cooking facilities available.

Storage spaces

Clinical and domestic waste is stored in the "coal hole" in the basement and in the laboratory along with materials and other disposable products that cannot be stored in the treatment rooms or in the preparation room.

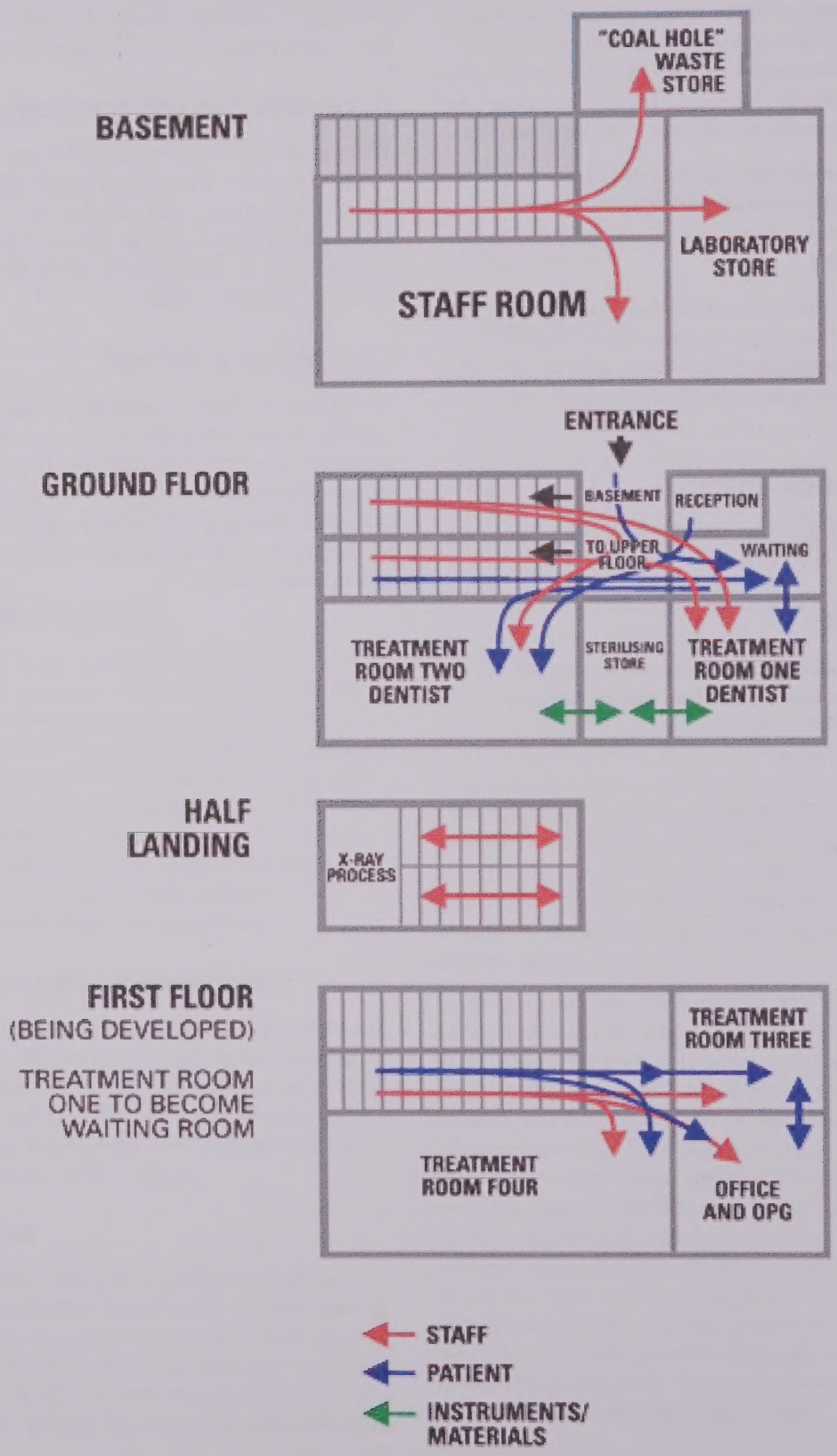
IT, records and communications

There is a computer system installed that is used only for appointments, accounts and other office functions. There is no clinical system, as paper records are used by all dentists. There is a digital camera attached to the microscope in treatment room one, with a monitor placed on the work surface.

Concluding comment

The practice is about to undergo an expansion, with the addition of two new treatment rooms, a room for an orthopantomogram (OPG) unit and an additional sterilizing/preparation room. On the ground floor, treatment room one will be converted into a larger waiting room, allowing the reception area to be increased and an office created.

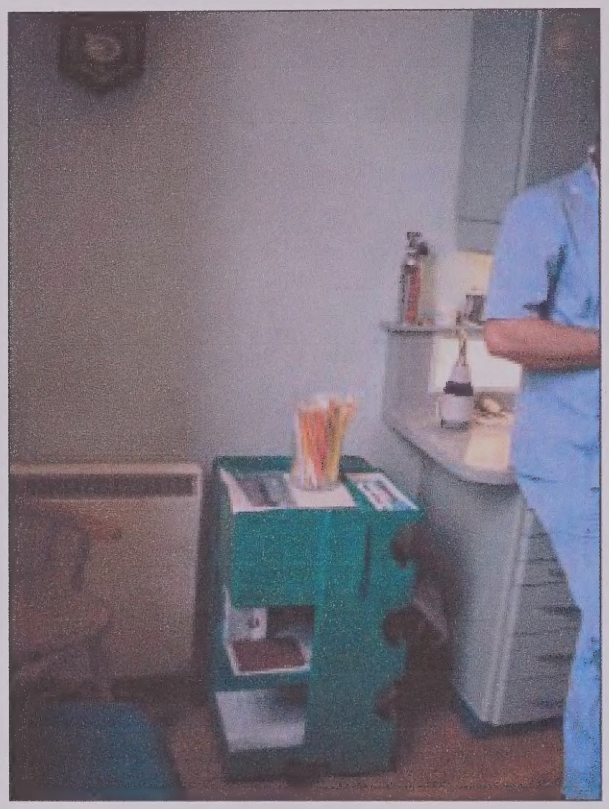
BEAUMONT PRACTICE, OXFORD



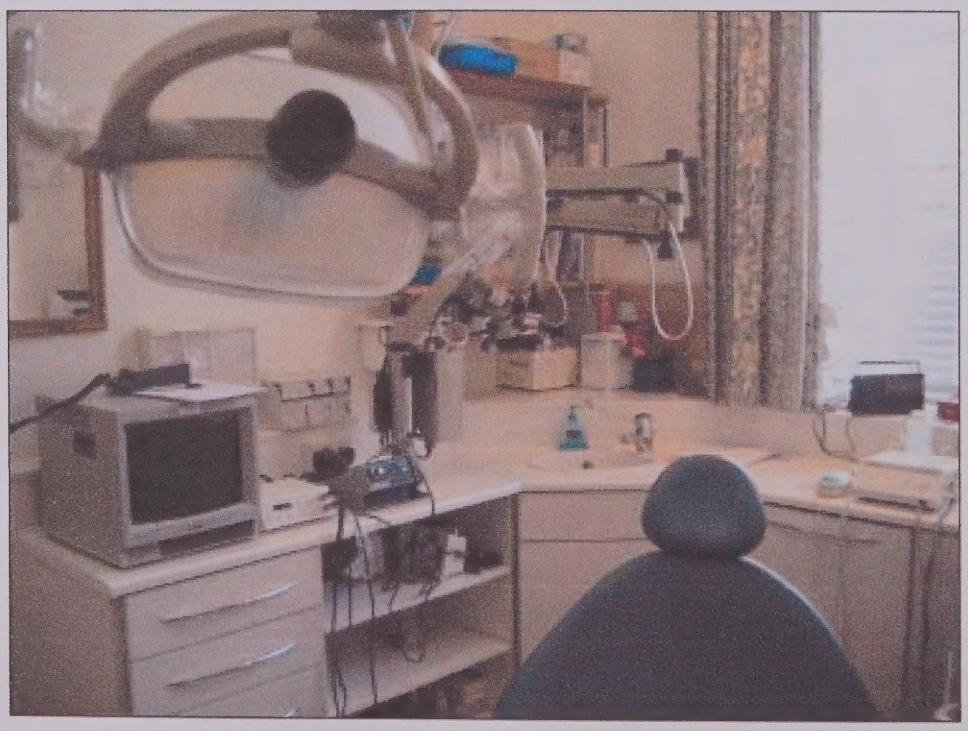
Location map

The building showing the side access. The practice occupies the basement, ground floor and first floor of the building

A dentist's "caddy" for frequently-used patient oral hygiene aids



A clinical microscope attached to the work surface, together with the monitor that enables patients to see the procedure



The waiting room

Blandy House, Henley-on-Thames

Location, site, context

The practice is located in an 18th-century house which has been listed by English Heritage. As well as the practice, the building contains company offices and residential flats. The building is situated at one end of the main shopping street and is on a main bus route. The nearest car park for patients is 150 m away. There is a rear entrance and a shared car park for the house which allows for parking for the dentists. There are three full-time and one part-time dentists, two part-time hygienists and five dental nurses. There is also a receptionist and a practice manager. The practice now sees nearly all its patients under private contract. There are approximately 5000 regular patients and another 2000 whose records have been archived.

Organisational concept

The practice operates an "open-door policy", and the front door is only locked at lunchtime and when the practice is closed. The front door cannot be seen from the reception, although the doorway to the waiting room is opposite the reception desk. Wheelchair access is available via the rear entrance when required, although there is no WC that will allow wheelchair access. Patients report to reception on arrival and then wait in the waiting room. They are collected from there by either the dentist or hygienist or a dental nurse. Occasionally the receptionist invites the patient to make their own way to the appropriate treatment room. At the completion of their appointment patients return to reception to book another appointment, settle accounts or purchase dental merchandise from a limited range.

When patients or staff require a higher level of confidentiality than is possible in an open reception area, they are offered the opportunity of discussing their affairs in the practice office on the first floor. All telephone calls are answered from the office and all telephone appointments are made on the comprehensive patient management system.

Comment on patient experience

Once through the front door the practice has an elegant calmness; the reception and waiting room are quiet and noises from the street are muted. Most clinical activity is on the ground floor, and patients need not climb stairs for treatment unless they are under the care of the hygienists.

Public spaces

The entrance hall is reached through the outer door, which is always open, and a glass-panelled inner door, which is usually closed. It is carpeted, has an antique mirror on the wall and is not highly illuminated. The reception is on the left and is well lit; there is a low desk, and the receptionist can see the entrance to the waiting room and the passageway at the side of the house through the window. As the practice has a full patient and clinical management system, patient arrivals are indicated on the computer in the relevant treatment room. The waiting room is a large, elegant room with two settees and five individual seats. Lighting is mainly from low-level table lamps. The seating is well spread out and there is plenty of personal space. There are no patient education or marketing materials on display. There is a patient WC at the rear of the ground floor.

Clinical spaces

There are three treatment rooms on the ground floor and one on the first floor.

Treatment room one (14 m^2) has a window onto the main road but has blinds to maintain confidentiality; the dental chair faces the window. There is a sealed wooden floor and a ceiling-mounted track with spotlights to illuminate the room. There is cabinetry on each of the three non-window walls and a desk on the right-hand side. The dynamic instruments, suction and dental light are attached to the dental chair. The X-ray unit is attached to the wall behind the patient's head. There is an autoclave and ultrasonic cleaner in the corner behind the patient. There is air-conditioning and an extractor fan above the autoclave. The treatment room has a door from the area in front of the reception desk and another that is

behind the desk. The treatment room is a cool white colour, with the chair facings a splash of red.

Treatment room two (15.6 m^2) has a window, with curtains, onto the rear garden area, a wooden floor and cabinetry behind the patient's couch – which faces the window – and along the whole wall to the patient's left. There is a small cart unit on wheels to the dentist's right, which contains the dynamic instruments. The treatment room is air-conditioned and has an autoclave and ultrasonic cleaner at the far end of the nurse's work surface. The dental light and radiography unit are wall-mounted. The treatment room has one door at the wall facing the window.

Treatment room three (24 m^2) is a large room facing the garden and has a large picture window which can be covered by a heavy net curtain. It is possible to see into this room from the pathway from the car park into the building. The room is divided into two functional areas by a fixed open shelf unit. The larger part (15.7 m^2) is the treatment area and the smaller section is used as an office and patient interview area. The room is used by an orthodontist on occasion, as well as for general dentistry, and this area contains equipment for tracing radiographs for orthodontic assessment. The treatment room has a wooden floor, but the office area is carpeted. There is a desk in the office section and cabinetry on both the side walls of the treatment area. The patient's chair faces the window. The only door is at the rear of the room. There are spotlights in the ceiling and a track light in front of the window. The dental light and the dynamic instruments are chair-mounted and the radiography unit is wall-mounted. There are a number of mobile cabinets stored under the work surfaces that are brought nearer to the dental chair for particular procedures. There is an autoclave, ultrasonic cleaner and two sinks in the corner near the window, with sufficient work surface to allow separation of dirty and clean instruments.

Treatment room four (14 m^2) is on the first floor and is reached by the staircase at the rear of the building; it looks out onto the main road and is used by the hygienist. There is a carpet and vinyl floor, and the wall covering is linen. The patient chair faces away from the window, and patients face the entry door. There is an L-shaped cabinet on the patient's left and a mobile cart with the dynamic instruments on the patient's right. The dental light is attached to the dental chair. The clinical area is to the right of the room and there is a cupboard on the left with oral hygiene aids on display. There are spotlights in the ceiling and an air-conditioning unit. As the first-floor landing is shared with another tenant of the house, the door to the treatment room is kept closed and locked at all times.

Support spaces

There is a patient WC on the ground floor and a shared one on the first floor.

Radiography

A darkroom has been created in the basement area which allows wet processing of films. All the treatment rooms have their own intra-oral radiography units.

Administration spaces

The office of the practice manager (9.5 m^2) is on the first floor and is where the paper patient records are kept in locked filing cabinets. It is also used when more confidentiality is required than may be possible in reception. All incoming telephone calls are answered in the office if possible. As the first-floor landing is shared with another tenant of the house, the office is kept closed and locked at all times.

Staff spaces

There is a 36 m^2 open space in the basement which is split into two areas. The larger part acts as a staff room and has lockers for staff use, a settee, chairs and a table, a sink and basic beverage-making facilities. The room is also used for staff meetings. The other part is used for storage of clinical and other material. There is a staff WC in the basement area. There is very little natural daylight from the windows at street level at the front of the house, as they are blocked by cupboards as a privacy measure. The basement has a restricted height, made more difficult by the exposed beams in the ceiling, which restricts movement by the taller members of staff. Patients are not encouraged to venture into the basement. There is also a shared kitchen on the first floor.

Storage spaces

Bulky items and waste, as well as clinical stock, are stored in the basement in secure cupboards, while current clinical materials and other items are stored in the cabinetry in the treatment rooms.

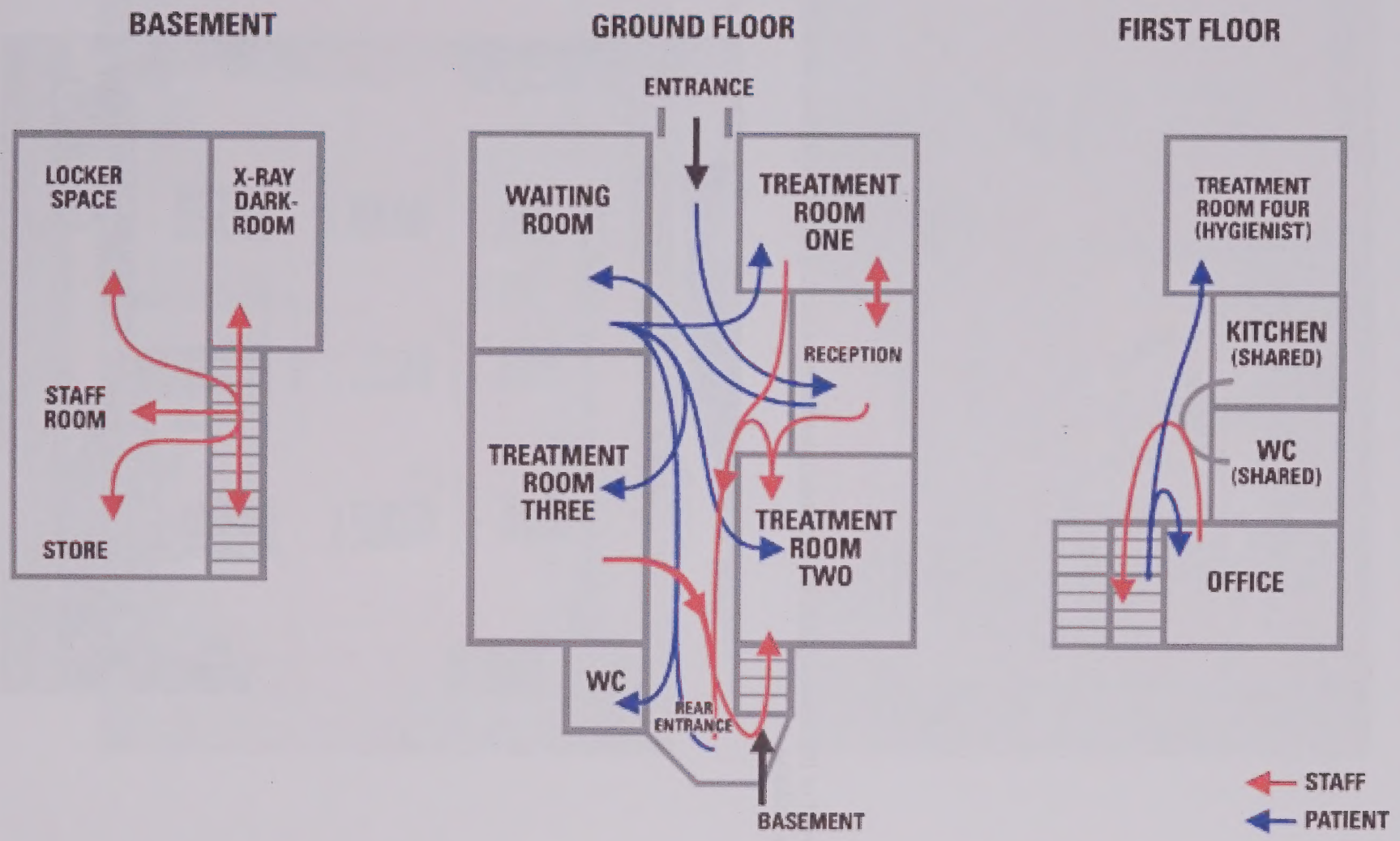
IT, records and communications

There is a full patient and clinical system installed in all areas and a comprehensive office system for the practice manager, who can also access the patient appointment system. There is a comprehensive telephone system linking all aspects of the practice.

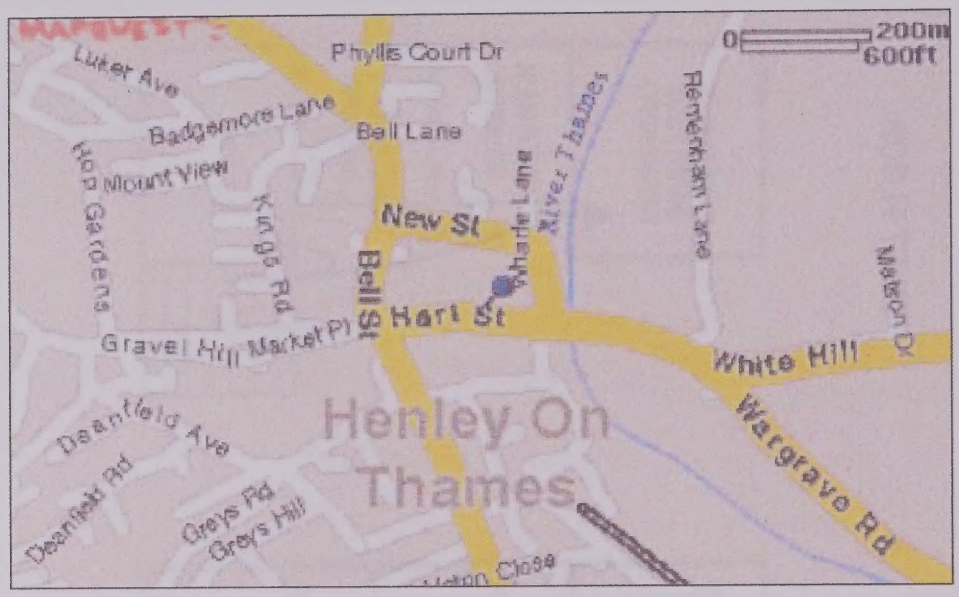
Concluding comment

This practice has been able to overcome the inherent difficulties of using converted domestic property by dint of the large room sizes and the air of space given by high ceilings in the ground-floor rooms (3.4 m). There is much variety in the design of individual treatment rooms, and the whole practice has a warm and welcoming feel. The decoration is in keeping with a Georgian house.

BLANDY HOUSE, HENLEY-ON-THAMES

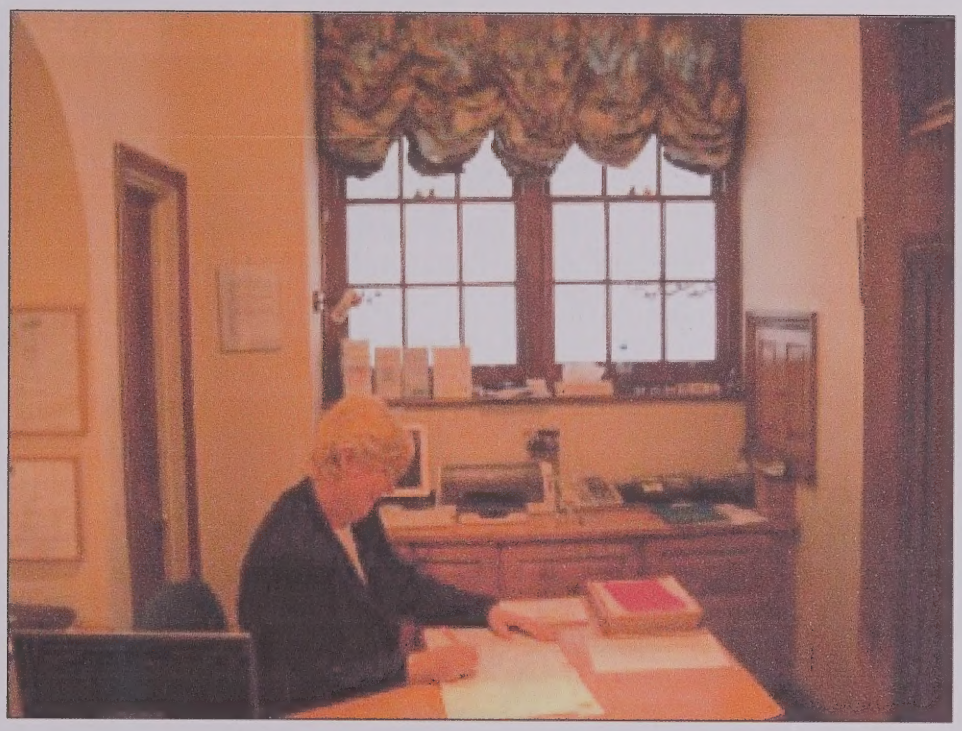


Location map



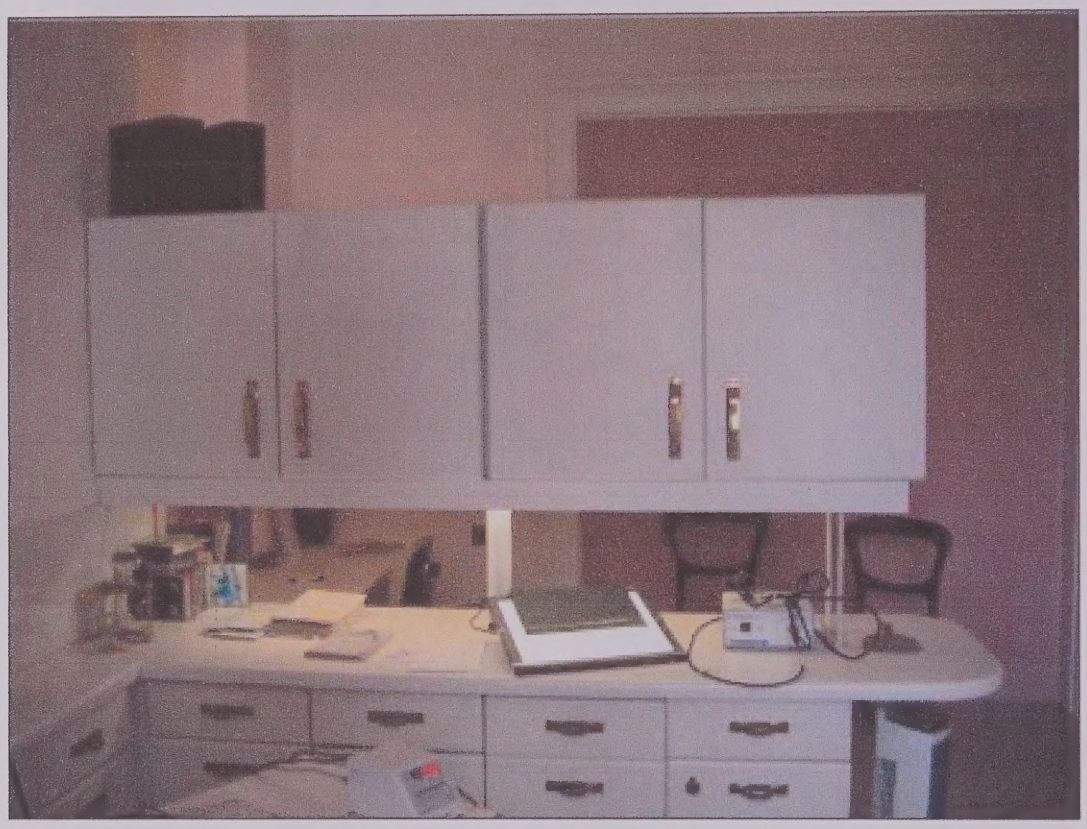
The front of the building. The practice occupies the basement, ground floor and part of the first floor of the building

The reception desk



The staff room in the basement

The use of a fixed cabinet to divide the rear "office" from the clinical area.
Note the large portable radiograph viewer on the top unit



Ship Street, Brighton

Location, site, context

The practice is located on the ground floor and basement of a 1780s building that was extensively rebuilt in the 1930s. It has been a private house, a solicitor's offices and an antique shop. It is a corner building; the front is on a road leading from the town centre to the sea and the side is on a passageway between two roads. The upper part of the house is private living accommodation and is separate from the practice. There is one full-time and one part-time dentist, and two part-time dental hygienists. There are a number of ancillary staff who have a variety of functions. The practice sees children under NHS contract but all other patients are seen under private contract. The practice is open six days a week. As the front door has two steps up into the practice, disabled access on the level is through a door in the side passageway. The practice has been in this location for three years and is not yet fully completed.

Organisational concept

This practice is organised on the "care team" principle and has a very flexible facility and staff approach. The patients enter the shop through the front door and are met by one of the care team members, who will stay with them throughout their visit. They are taken into the lounge where they sit at a table with the care team member while the preliminary administration is carried out. The care team member has a laptop computer linked with the central system via a wireless network. The patient's record is located, and the care team member explains what the appointment is for and can show some educational material as means of preparation for the patient. When the dentist is ready, the patient and care team member move together into the treatment room, where the care team member acts as the dental nurse. The patient's records are available on the practice computer, which is visible in the treatment room. On completion of treatment the patient and the care team member return to the lounge to arrange further appointments and organise payment. As the treatment rooms are identical, the dentist can move to another prepared room for the next patient. The process of preparing and clearing the treatment rooms is simplified by placing a specific collection of instruments and materials for each procedure into a box (or pod). These are prepared in the central sterilizing unit (CSU) and returned for cleaning, sterilizing and repackaging.

Comment on patient experience

The practice encourages phobic and nervous patients, as they find the less obviously structured administration and staff hierarchy easier to cope with. The open-plan facility takes a lot of the mystique out of the visit. The patients are encouraged to comment on the development of the practice. Patients who are used to a more conventional practice may feel disorientated by the informality of both staff and premises, as much of the interaction with patients which traditionally occurs in the treatment room with the dentist has been transferred to a non-clinical location and may be carried out by a care team member. While every effort is made by the practice to ensure that the same care team member greets the patient at every visit, this may not always be possible.

Public spaces

The patients are encouraged to consider much of the practice to be their domain, as only the treatment rooms and CSU are private. The shop and the lounge are one continuous space, and lead into the area where the patients' WCs are and then into the office and practice management area. There are only limited barriers, and areas are demarcated by function rather than by partitions. When the basement area is developed there will be a complementary therapy centre. There are refreshment facilities in the lounge, and as well as tables and chairs there is a bar with stools in the shop. The front door is kept open whenever there is a care team member available; it is locked for security reasons when no one is present in the shop area.

Clinical spaces

There are currently two treatment rooms, with a third being added. They are all similar in size (12.75 m^2) and shape. They are identically equipped with a dental chair, a wall-mounted dental light unit on the dental nurse's

side and a digital radiography unit on the dentist's wall. The pictures are viewed on the computer screen built into the wall behind the patient's head. The radiography visualisation system is incorporated into the comprehensive clinical and patient management system. The suction tips are fixed to the front edge of an elliptical work surface in front of the dental nurse on which the procedure pod is placed. Once the procedure is completed the used pod is returned via a flap into a dirty area in the CSU. The next pod is brought into the treatment room through an aperture with two glass doors. There is a glove dispenser in the wall between the flap and the glass door aperture. There are no sinks in the treatment rooms and hand-washing is carried out in the CSU or elsewhere. There are wall-mounted halogen spotlights to provide ambient illumination.

Support spaces

The major support facility is the CSU, which is located behind the three treatment rooms. It is a long, narrow passageway and has storage for all the materials and instruments used in the treatment rooms. It also houses the ultrasonic cleaner and the autoclave. There are clean and dirty areas, and the procedure pods are assembled in the clean area and stored in the glass door aperture. The CSU gets hot, and there are fans working to move the air. The controls and switches of the electrical and other services to the treatment rooms are in the CSU. The practice's method of working requires that someone who is aware of the set-up protocols should be in the CSU whenever patients are being seen. It would benefit considerably from an air-conditioning system to improve working conditions. There is also a two-roomed dental laboratory that provides support to the practice. Both of these face onto the passageway; work being carried out is purposely visible from the outside, and special care is taken to preserve patient confidentiality.

Administration spaces

As well as the use of the lounge as an extension to the administration of the practice there is an office at the rear of the ground floor where the practice administration is carried out. There is a diary keeper, who answers the telephone and makes appointments, and a housekeeper who manages the upkeep of the facility.

Staff spaces

There is an area in the basement that has been set aside for staff facilities; as yet they are not finished, but there is a washing and drying machine and a kitchen table with limited refreshment facilities. There are no staff lockers as yet, but a changing area is partitioned off. Staff meetings are held in the front room, which is also used when a confidential location is required – usually for extremely nervous patients or as a recovery room. On occasion it is used for art exhibitions or hired out for meetings.

Storage spaces

All materials, instruments and disposable items are stored in the CSU, and clinical waste is first stored there before being removed to a store area behind the front room. When it is to be collected, the waste is moved near to the rear door to make it possible to collect without going through the public areas of the practice.

Domestic waste is stored at the rear of the practice.

IT and communications

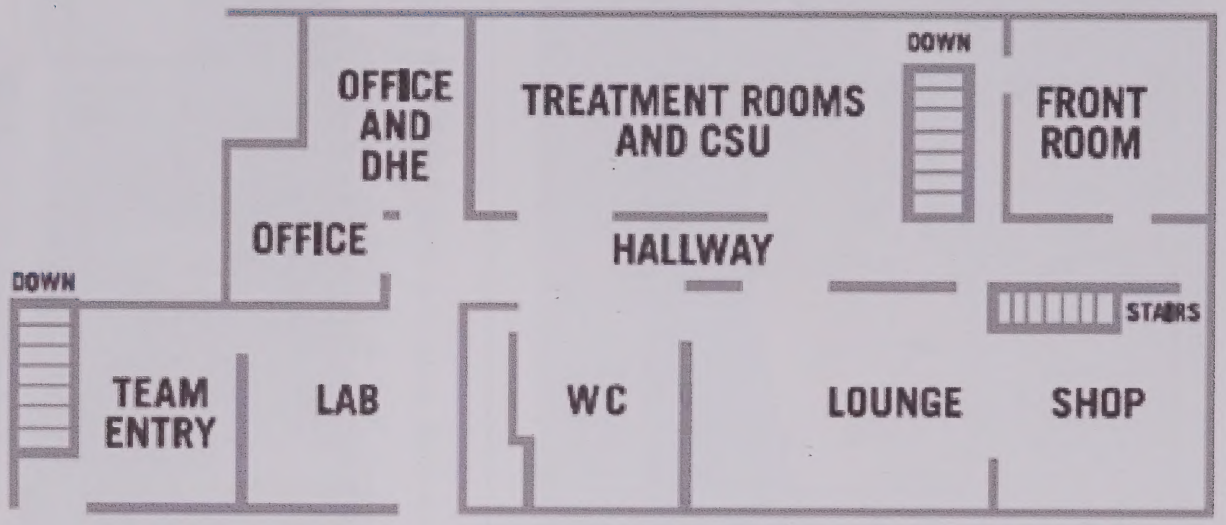
The whole practice is run on a comprehensive clinical and patient management system and integrates both fixed computer terminals at specific locations, such as the treatment rooms, and the mobile computing used by the care team members in the lounge and treatment rooms.

Concluding comment

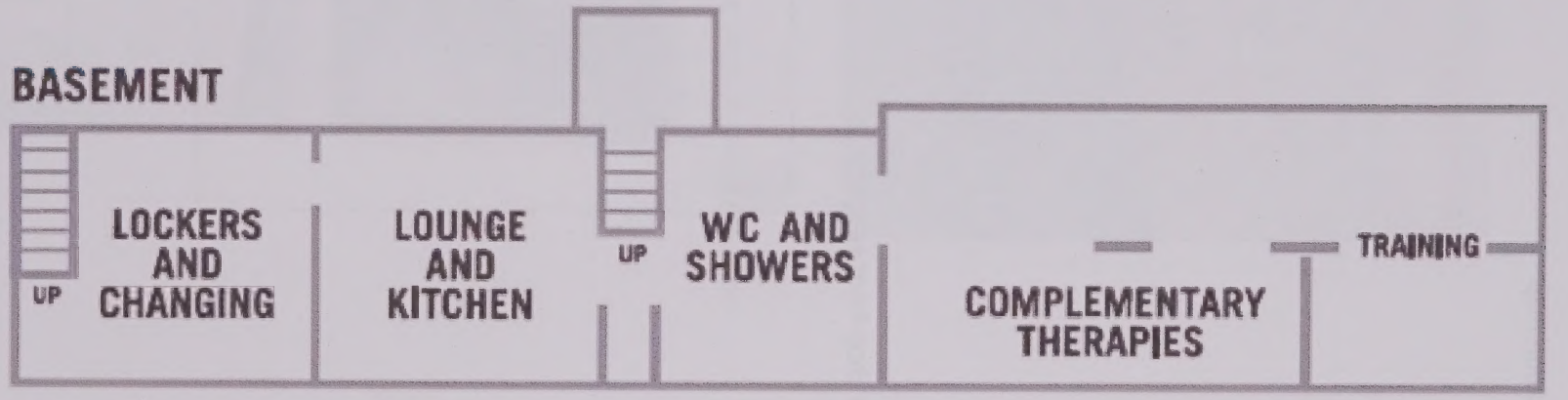
This practice has made considerable efforts to create a practice that is different from the norm. It has adopted a philosophy of care provision that allows a less formal facility to function, to reduce patient stress and encourage those who are discouraged by the conventional practice. In addition, the construction of treatment rooms stripped of all superfluous material, coupled with the use of treatment pods and the CSU, has restructured the practice of dentistry from basic principles. There is still a considerable amount of the development to be completed, but the practice has already established itself within its target community.

SHIP STREET, BRIGHTON

GROUND FLOOR



BASEMENT



Location map

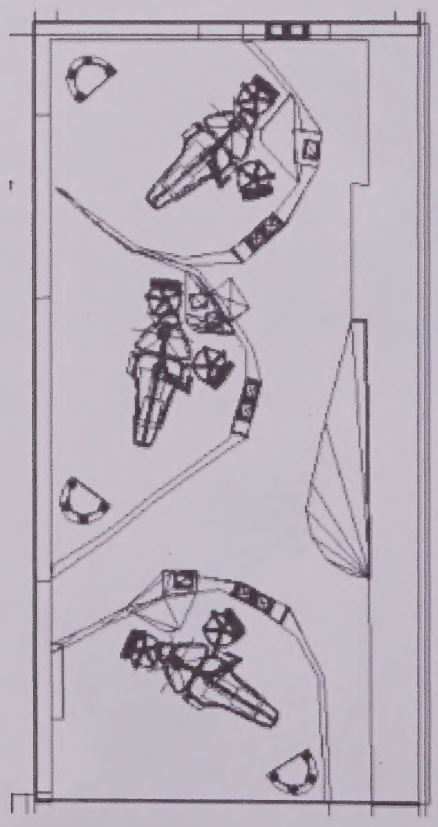
The shop front entrance

The lounge and shop from the rear of the practice

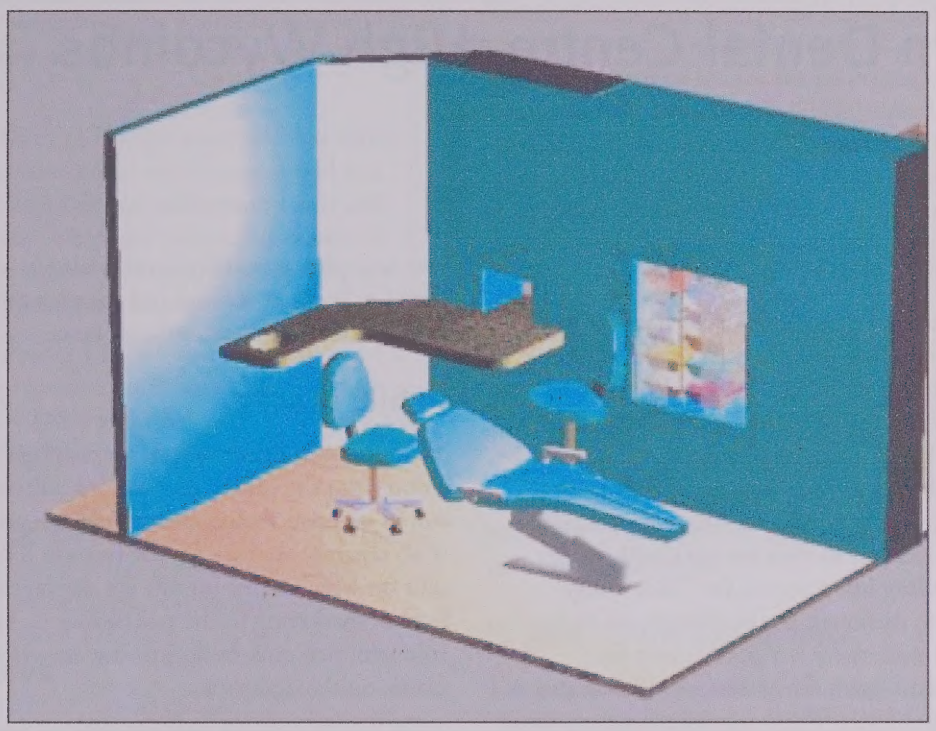
The treatment room. Note the "clean" portal with glass doors and the stack of procedure pods

The "in-house" laboratory

Schematic for the treatment rooms and preparation area



The treatment room



Chiltern Dental Centre, High Wycombe

Location, site, context

This practice is located in an 1880s detached house which has been much modified over the years, culminating in a large rearward extension being added in 1999–2000 by a local architect, with a lot of input by the owner of the practice. It now has five treatment rooms, although only three are currently in use. It is located on a busy main road with several buses and within 400 m of a railway station. The practice has its own car park with spaces for 15 cars, including one reserved for "Blue Badge" (disabled) holders. Although the building is on higher ground than the road, there is a gentle ramp for pedestrians to use to reach the entrance, which is also accessible for wheelchairs. There are three dentists, three dental nurses, a receptionist and a practice manager. The practice does not currently employ a hygienist but may do so again in the future. The practice has approximately 7000 patients. There is a specially adapted WC on the ground floor for those with a disability. The practice and the car park are under video surveillance and the alarm system is linked to the police.

Organisational concept

Patients arrive at the outer door and are recognised on the CCTV. The inner door is then released and they move to reception. The receptionist has no direct view of the front door. When registered, patients wait in one of the two waiting rooms to be collected by their dentist and taken to the treatment room. There are two treatment rooms on the ground floor and three on the first floor. The practice is open three nights a week until 9.30 pm. When a patient at reception requires a more confidential location they are seen in the office, which is behind reception. The office is also a throughway to the staff room.

Comment on patient experience

As a significant number of patients arrive by car, the ease of parking is appreciated, as are the comfortable surroundings. Those patients who are treated in the first-floor treatment rooms are less appreciative of the steep stairs. The location on a bus route and near the station is seen as a plus, especially for commuters late at night. The use of pale pastel colours and the pleasant, cheerful staff lead to a relaxing, spacious ambiance.

Public spaces

The reception opens onto both waiting rooms and has a door into the office. The current patient records are stored on open shelves behind the reception desk. There is no separate security for the records. There is also a shelf unit on which items for sale are displayed. There is no further marketing in the public spaces. There is a colourful fish tank built into the reception desk, and plants on the desktops.

There are two waiting areas which join onto each other. The bigger one is near the entrance and has settees and chairs with space for eight patients. It has a low table for plants and magazines. The second waiting room has individual chairs for six patients, and two low tables. There are green plants in both rooms and a cold water dispenser in the smaller room. Both rooms have wooden floors. The landing on the first floor is too small to allow patients to sit and wait; there is a patient WC on the upper floor.

Clinical spaces

Treatment room one (16 m^2) faces the main road and has a bay window. The cabinetry is L-shaped behind and to the left of the patient chair. The dynamic instruments are on a cart to the right of the patient. The spittoon, suction heads and the dental light are fixed to a pedestal unit sited to the left of the patient chair. The floor is covered in welded vinyl which is fixed to the upstands for ease of cleaning. The images from the digital radiography unit and the intra-oral camera are viewed on a monitor on the work surface behind the patient, and can also be seen by the patient on a monitor suspended from the ceiling in front of the patient. There are four high-frequency fluorescent units inset into the suspended ceiling, providing a good level of background lighting. There is an autoclave, which uses cassettes to store instruments, on a shelf, and an ultrasonic cleaner underneath. The instrument trays are washed but not sterilized. The two windows have vertical slatted blinds.

Treatment room two (11.5 m^2) has a similar layout to treatment room one, although it is smaller. It is reached directly from the second waiting room. It was used by the hygienist but is now used for patients having bleaching. It has a vinyl floor.

Treatment room three (10 m^2) is small and has similar cabinetry to treatment room one; it is equipped in a similar fashion. It has a digital radiography unit and an intra-oral camera. There are two ceiling-mounted fluorescent fittings across the room. The floor is vinyl and the window has a fabric blind.

Treatment room four (12.2 m^2) is a small room and is fitted out and equipped in a similar way to the other treatment rooms. It has a vinyl floor covering and two fluorescent strip-lights mounted on the ceiling along the length of the room.

Treatment room five (14 m^2) is a similar room to the others on the first floor. It has a vinyl floor, digital radiography unit and an intra-oral camera.

Support spaces

There is a preparation room on the first floor which acts as a storeroom, and has an autoclave and instrument-cleaning bath as well as an orthopantomogram (OPG) unit and film processor.

Radiography

All the treatment rooms used by dentists have digital radiography units and so do not need wet film processing. However, the OPG unit is a conventional machine and still requires films to be processed. There is a daylight processor in the storeroom on the first floor.

Administration spaces

There is an office on the ground floor which is used by the practice manager. The office leads into the staff room.

Staff spaces

The staff room is a large room behind the reception. It is reached through the office. It has a skylight, and blinds have been fitted to reduce the solar gain as the room can become uncomfortable in sunshine. It has a table and chairs and basic food preparation facilities. The compressed air and vacuum units are fitted in a cupboard adjacent to the staff room, and can be heard in the room despite noise insulation. There are no secure lockers available.

Storage spaces

Clinical materials are stored in the treatment rooms, in the preparation room on the first floor and in the compressor room. Clinical waste is stored in the compressor room and general waste in a bin in the car park. The practice distils its own water and stores it in the compressor room.

IT and communications

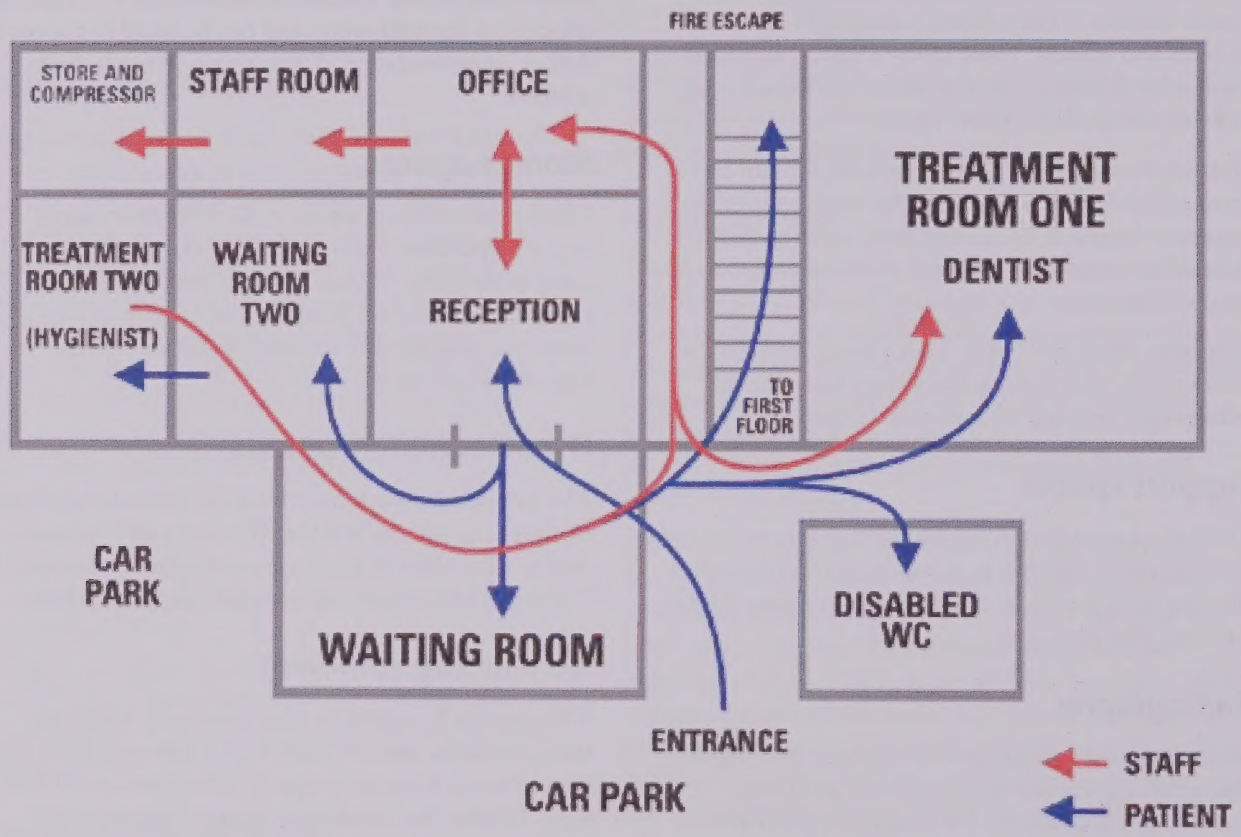
The practice is networked with a full clinical and patient management system and the office has a full business system. The office staff can access the patient system. There is a full internal and external telephone system.

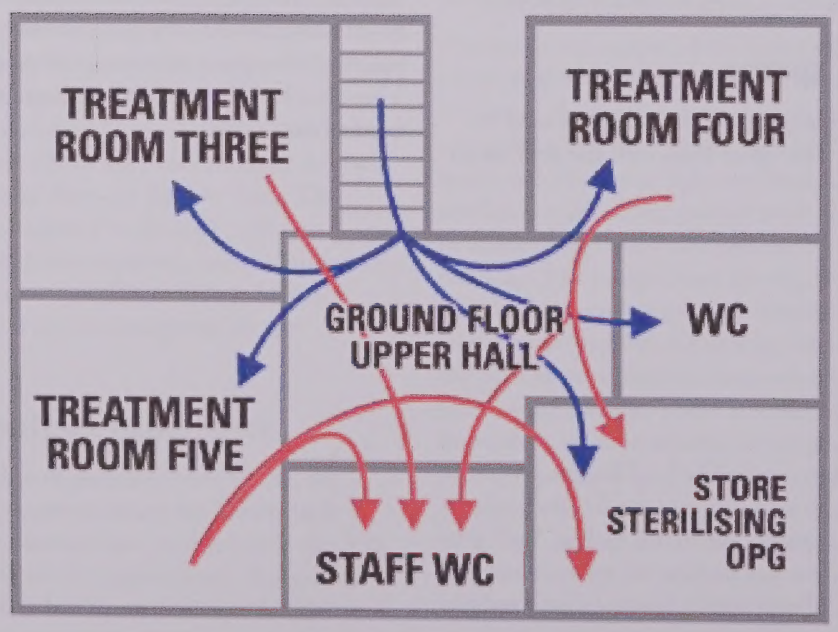
Concluding comment

This practice is housed in what is virtually a purpose-built, spacious, modern facility on the ground floor but a conventional domestic property conversion on the first floor. Despite the installation of new equipment and modern digital accessories there is a lack of space. It has been helped by the removal of some of the treatment room functions into the preparation room. The whole practice conveys an impression of calm and efficiency. There is a lot of space on the ground floor but it does not feel over-large.

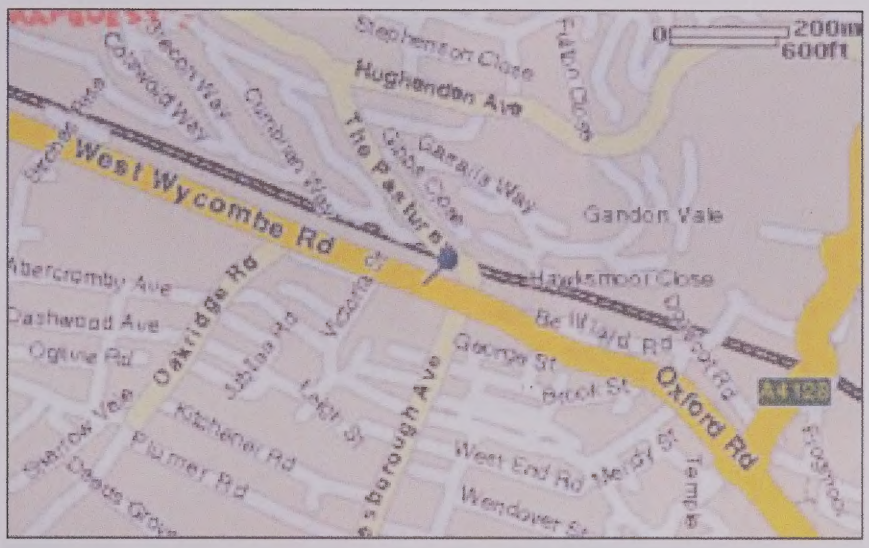
CHILTERN DENTAL CENTRE, HIGH WYCOMBE

GROUND FLOOR





Location map



The entrance to the practice and the car park

The waiting room with water cooler for patients' use

The treatment room. Note the computer monitor, on which patients can see digital radiographs, and also the cassette autoclave on a shelf above the ultrasonic bath and sink

Craig House, Banstead

Location, site, context

This seven treatment room practice is located in a large 1930s detached brick-built suburban house situated on a feeder road to a main trunk road. There is a bus stop outside the practice and parking for up to eight cars in the drive and forecourt of the house. There is also street parking very nearby. The practice has recently been taken over by a corporate provider and currently provides care for approximately 10,000 patients. There is a large practice sign overlooking the street. There are seven dentists, three of whom are specialist orthodontists; none of the dentists are full-time. There are four hygienists who between them are equivalent to two full-time hygienists. There are four dental nurses, two receptionists and a practice manager. The practice is set higher than the adjacent road and is reached by a gentle rising path, used by both pedestrians and vehicles.

Organisational concept

Patients arrive and register their attendance at reception; they then wait in the ground-floor waiting room if their dentist or hygienist is using one of the ground-floor treatment rooms. If their dentist is on the first floor they may be asked to wait in the upstairs waiting room. They are then called into the treatment room by either the dentist, the dental hygienist or the dental nurse. After treatment the patient returns to reception to book further appointments or settle accounts. Should there be a need for confidentiality, patients and receptionists can move into the office section of reception.

Comment on patient experience

This is a large practice that has recently been acquired by OASIS but continues to be run as a family practice and an orthodontic referral practice. It has a friendly atmosphere, and while it is obviously a busy practice it is quiet and unhurried. Patients in the ground-floor waiting room can hear street noise but, despite the proximity of the waiting room to two of the treatment rooms, there is very little noise pollution. The first-floor waiting room is a little dark and is not very spacious compared to the downstairs one, despite the fact that it serves four treatment rooms.

Public spaces

The ground-floor waiting room is contiguous with the reception and has both individual and bench seating for 14 people. The receptionist has a good view of the front door, which is left unlocked during practice hours. There is an illuminated wall cupboard to display products that are available to be purchased in the practice. There are small seats for children in part of the waiting area. There is a cold water dispenser beneath the reception desk. The passageway to the three ground-floor treatment rooms, the downstairs WC (which is difficult for those with a disability to access) and the stairs to the first floor are contiguous with the waiting area. All patients have to traverse the waiting room to get to the reception desk. There are patient WCs on each floor. Access for wheelchairs and for those with disabilities is limited. There is a step to negotiate to get into the practice, and neither WC is easily accessible.

Clinical spaces

There are seven treatment rooms in the practice. One is primarily used for orthodontics; two are used by hygienists and four by dentists.

Treatment room one (21 m^2) – is used by a dentist. It is divided into three areas. The operating area has a Belmont chair and L-shaped cabinetry behind and to the left of the patient. The dynamic instruments are attached to an arm fixed to the cabinetry to the right of the dentist's position. This unit has a small instrument tray on top. There is another larger instrument tray attached to an arm clamped to the work surface above the dynamic instrument arm. The radiography unit is attached to the wall above the flexible arms and the control unit on the opposite wall at the other end of the room. The radiography film viewer is on the dentist's work surface. The computer monitor is on a raised plinth in the opposite corner, above the dental nurse's work surface on which the keyboard sits. The dental light is attached to the wall above the nurse's work surface. The

ultrasonic instrument washer is on the nurse's work surface. The second area is for administration and for interviewing patients; there is a desk and another radiograph viewer. The third area is a store unit which also contains the autoclave and emergency oxygen supply. The clinical area has a vinyl floor covering; the administration and the store area has a wooden floor. The treatment room has air-conditioning. The ambient lighting is from fluorescent tubes built onto the flush panel ceiling.

Treatment room four (8.6 m^2) is a small room used by a hygienist, and the autoclave and the dynamic instrument mobile cabinet are stored in a small alcove created under the eaves of the house. It has a large mural on the wall facing the patient as a distraction; and vinyl tiles on the floor.

Treatment room five, which is used by the orthodontists, consists of two joined rooms, the treatment room per se (6.72 m^2) and the model store and access way (7.5 m^2). The small treatment room has cabinetry on the nurse's side only. It has a central dental chair and the dynamic instruments are on a mobile cart. There is a stacking storage unit for the instrument trays and a small wall-mounted hand-wash basin. The intra-oral radiography unit and the dental light are on a ceiling-mounted track unit. On the dentist's side there is a large radiograph viewing unit set above the dynamic instruments and the relative analgesia unit, at a standing eye level and available to both dentist and patient. The model storeroom has a large open shelf unit that is capable of storing 500 current model boxes. Both are lit by fluorescent tubes and have vinyl floors.

Treatment room six (20.5 m^2) is used by a dentist and has a central dental chair with the light and spittoon attached. The dynamic instruments are on a mobile cart under the dentist's work surface. The cabinetry runs along three sides of the room. The radiography unit is attached to the wall and film viewers sit on the work surfaces. The treatment room has piped oxygen and nitrous oxide gases. On the wall facing the patient there is a video and television unit for patient education. The computer terminal is behind the patient and the autoclave is on a shelf above the nurse's work surface. There is a desk for administrative and patient interview purposes. The floor is covered with dark vinyl tiles.

Treatment room seven (12.5 m^2) is used by a hygienist, has new equipment and cabinetry, but does not have an autoclave. The instruments are sterilized in the autoclave in treatment room six.

The other two treatment rooms (two and three) have piped gases, fluorescent lighting and vinyl flooring.

Radiography

All five treatment rooms used by dentists have intra-oral radiography units, and a cephalostat and orthopantomogram unit housed in a small room on the first floor. All films are processed in this room as it contains daylight processing machines. Developed films are stored in the patient's record.

Administration spaces

The office space behind the reception desk has two computer workstations dedicated to patient appointments and accounts. Patient records are kept in filing cabinets within this office area. The practice manager has a separate office area within the space set aside for a staff room. The desk unit and the filing cabinets, fax machine and computer and scanner all compete for space within the limited area, and are now spreading into the staff area.

Staff spaces

There is a staff room which is shared with the practice manager's office. The room has fixed seating and a small table. It is used for staff meetings involving all staff, but dentists-only meetings are usually held in one of the treatment rooms. There is a limited facility for beverage and food preparation. There are no secure lockers, but staff can use a small storeroom in which to change and leave outdoor clothing. There is a separate staff WC within the designated non-patient area.

Storage spaces

As the practice has a large number of patients who have completed orthodontic therapy, the number of model boxes that have to be retained is significant and is ever-increasing. The current orthodontic models are stored in the model room, and those that are being kept for medico-legal reasons are kept in the loft (now full) and in a shed in the rear garden. The models from patients who have had prosthodontic appliances are kept in individual treatment rooms. Clinical materials are kept in individual treatment rooms or in the small storeroom on the ground floor. Clinical waste is kept within the treatment rooms and moved to secure bins in the garden until collected, and the same applies to domestic waste.

IT and communications

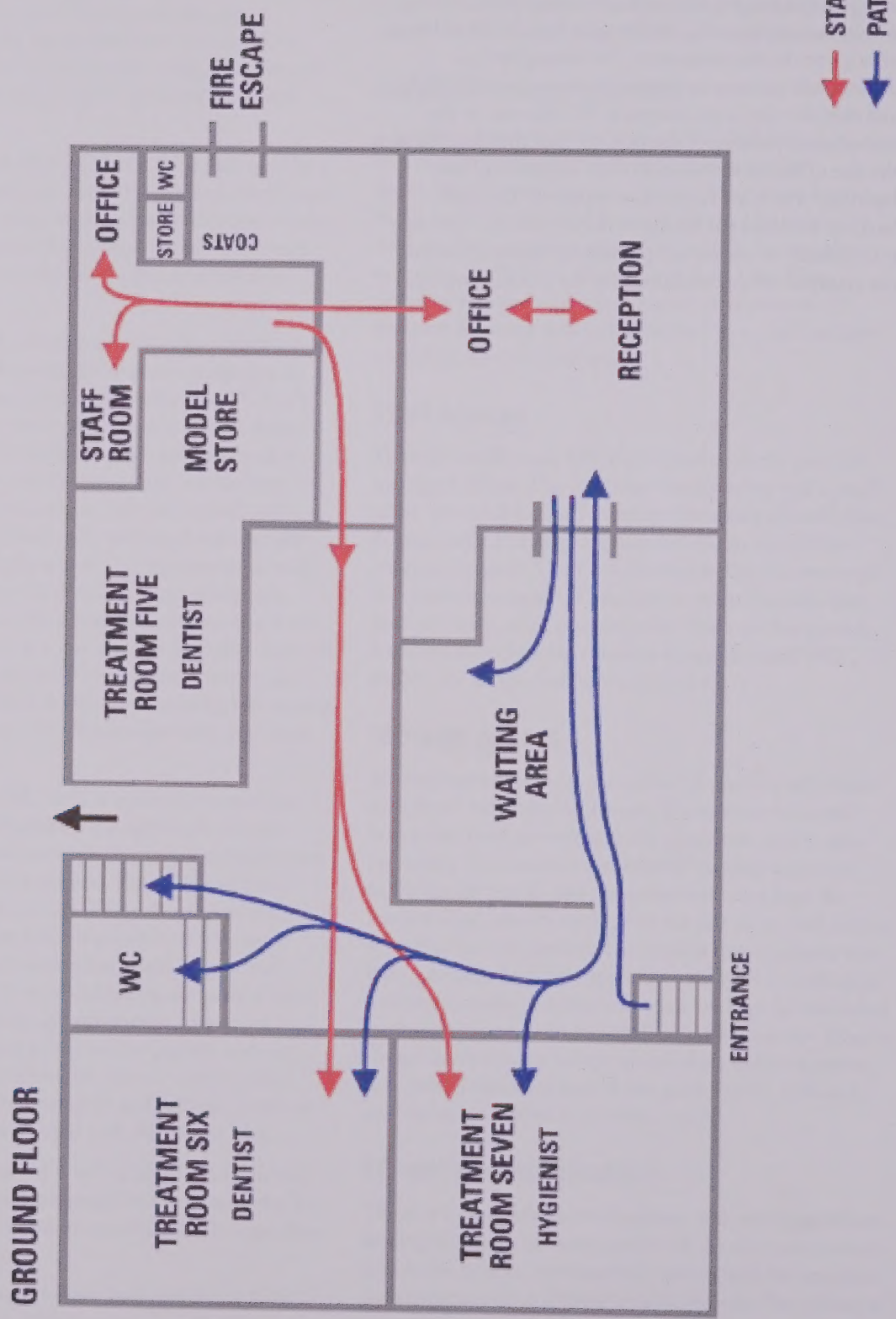
There is a comprehensive telephone and intercom system linking all rooms in the practice. All the treatment rooms are on the patient management system, and the monitors in treatment rooms display patient arrivals. The system is

not used as a full clinical system. Both reception and the practice manager have a full business system.

Concluding comment

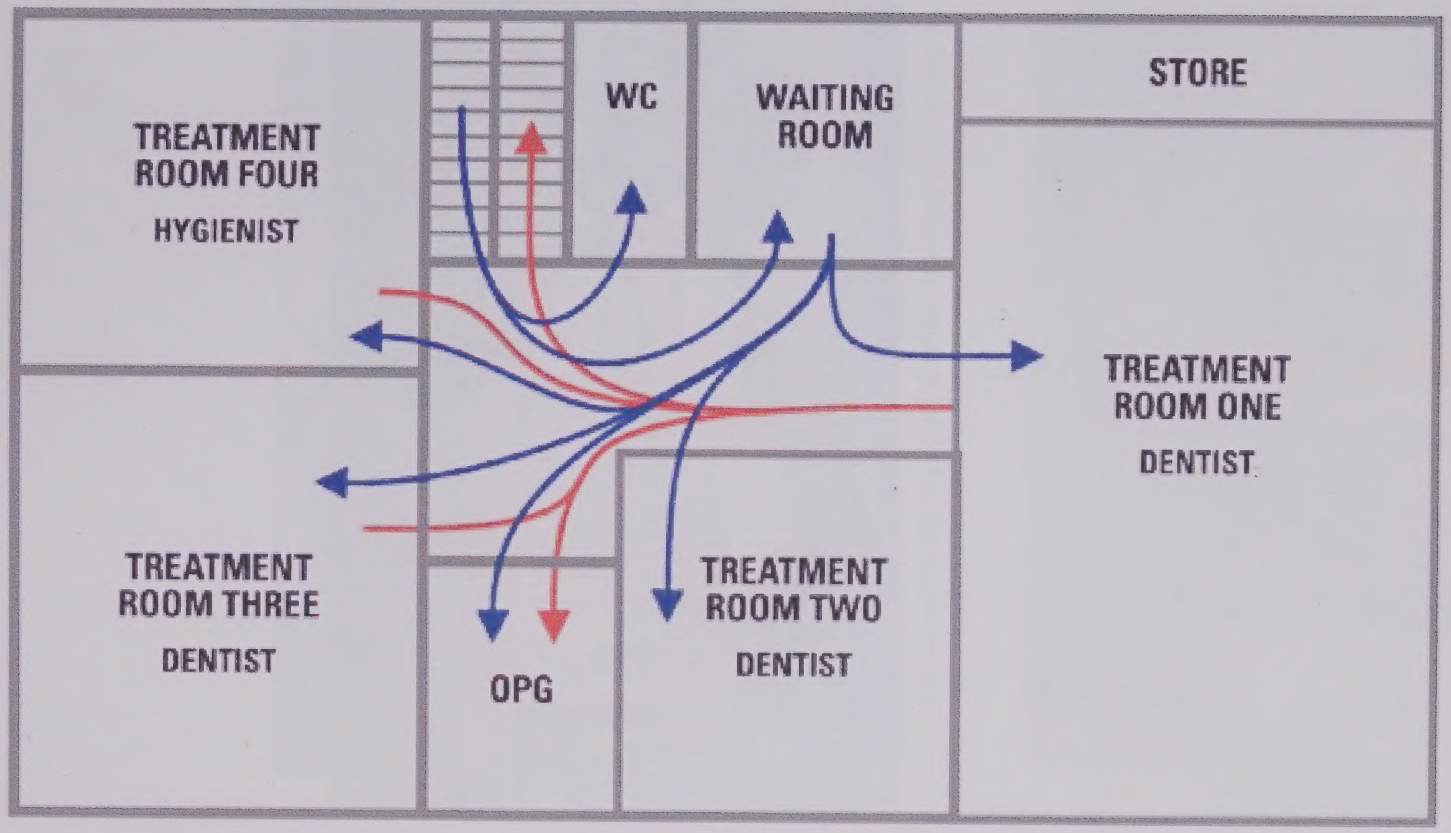
The practice has put a considerable amount of activity within the confines of a 1930s suburban detached house even given the rear extension. The throughput of orthodontic patients in practice is conventionally high, and this practice is no exception. It is the size of the orthodontic element of the practice that therefore dictates the size of the reception and office segments of the building, which are larger than expected. The staff facilities are minimal for a practice of this size, although it is difficult to see any simple way to improve them or the cramped office conditions for the practice manager.

CRAIG HOUSE, BANSTEAD



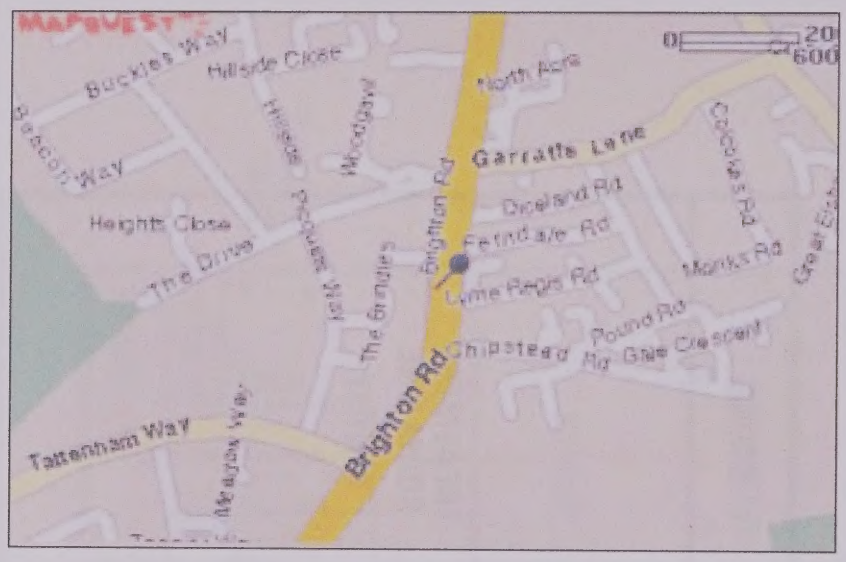
CRAIG HOUSE, BANSTEAD

FIRST FLOOR



STAFF
PATIENT

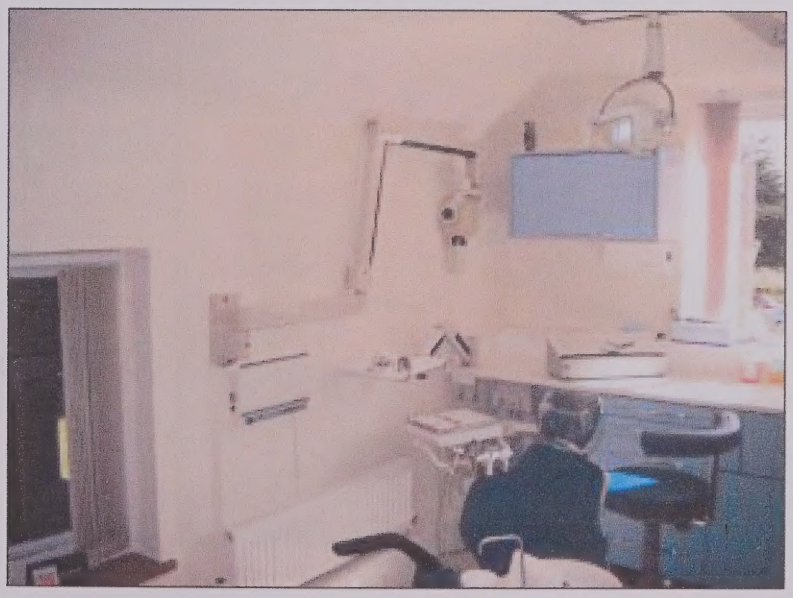
Location map



The practice

Reception

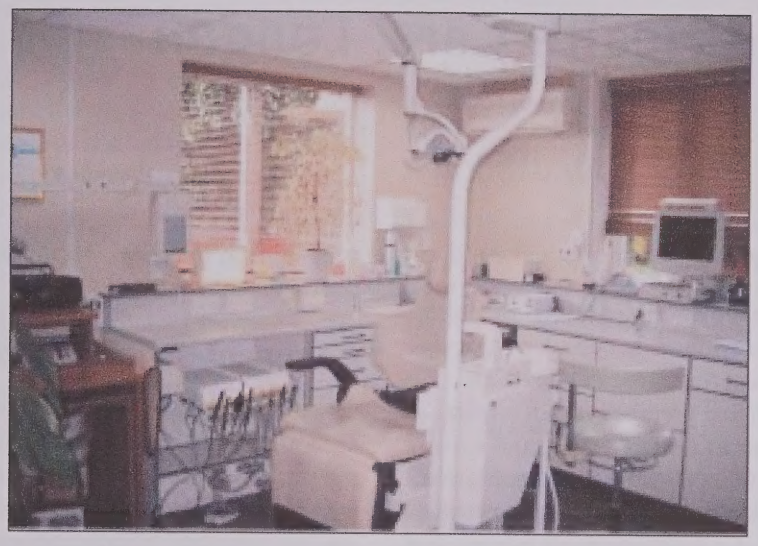
A treatment room. Note the second movable bracket table for the dentist's use



Mural in the hygienist's treatment room painted by local children

The autoclave sterilizer and the hygienist's instrument cart stored in the cubby-hole under the stairs

A treatment room



A treatment room used by an orthodontist

Hampstead Health Care, London

Location, site, context

This four treatment room practice is in a converted shop in a row of shops that were originally railway cottages built in the 1880s and were converted in the 1920s. The practice originally shared premises with a medical practice, which moved out in the late 1990s, and a major refurbishment and extension programme was completed in 2002. The practice is located on a one-way street that is on a bus route, five minutes' walk from an overground railway station and 15 minutes from an underground station. Parking is difficult, and on-street parking is metered. There is a preponderance of resident parking in the area. Off-street parking is available in an open car park ten minutes' walk away. There is a specialist orthodontic practice in the next-door shop which is not related to Hampstead Health Care. The practice has one full-time and three part-time dentists, and two part-time hygienists. There are three dental nurses and a receptionist. The practice is all on the ground floor, but the first-floor flat also belongs to the practice and is used as a crèche for the staff and also as a laundry facility. The practice has approximately 2000 active patients and records for another 6000; all are kept in lockable cupboards.

Organisational concept

Patients arrive at the front door, use the entryphone and enter the practice via a corridor to the reception area. Once registered, the patients wait in the small waiting area in front of the reception desk. All new patients are seen in the consulting room by the dentist for history-taking and, as many of the patients are anxious, the actual exposure to the clinical facilities is kept to a minimum. They are then escorted to the treatment room by the dentist and/or the dental nurse. After their examination or treatment they may return to the consultation room in order to discuss their care in a non-clinical setting. They are then advised to return to the reception to make further appointments or settle accounts. The practice operates a policy of preparing instruments on trays in the sterilizing and preparation room, transporting them on trolleys and then returning the used and dirty ones to the room for cleaning and sterilizing. They are stored in cupboards in the clean area of the room and not in the treatment rooms.

Comment on patient experience

The practice has contrasts of light and dark; the waiting areas are internal and are lit by reflected daylight from the skylight in the corridor to the treatment rooms. There is a contrast between the busy area outside the building and the calm and friendly atmosphere generated by the building, the staff and the philosophy of care provided. The practice attracts phobic patients as well as providing continuing care and specialist restorative treatment.

Public spaces

The reception and waiting area is an internal space; the receptionist controls entry and has access to CCTV of the street by the front door. The first waiting area has four seats and the second area by the consulting room has three seats. There is a range of products on sale at reception and there is some marketing and education material on display. There is a WC that is suitable for those with disabilities. The main corridor to the treatment rooms has a skylight along the whole length and floor-to-ceiling windows at the end leading out to the small landscaped courtyard. There is a fish tank in the wall opposite the second waiting room.

Clinical spaces

Treatment room one (9.8 m^2) is a small room with the advantage of having the corridor incorporated with the view of the courtyard at the end, giving a sense of space. It has reflected daylight from the end of the room. There is a door into the treatment room and double glass doors to the courtyard. There is cabinetry fixed to the three walls, with cupboards beneath the work surface; there are no cupboards above the work surfaces. The Belmont dental chair converts from an armchair into a dental couch. In the fold-up position there is more circulation space in the treatment room. The dynamic instruments are on a mobile cart, and the suction and the spittoon are attached to the dental chair. The radiography unit is attached to the wall beside the dentist's seat and the light

is attached to the nurse's wall. The film viewer unit sits on the work surface beside the dentist. There is a flat-screen monitor attached to the ceiling in front of the patient and a television high up on the wall near the doors to the courtyard. One is used for patient education programmes (on DVD) and the other for broadcast television. There is a vinyl floor and fluorescent lighting, as well as a skylight. Much effort has been put into reducing clutter, and many of the items normally found in a treatment room have been removed to the preparation room.

Treatment room two (10.5 m^2) is a totally internal room used by the hygienist, which gets some daylight via a high-level window into treatment room one. It also has a monitor fixed to the ceiling, fluorescent lighting and a vinyl floor.

Treatment room three (9.8 m^2) is a small room and has a large skylight in the centre of the ceiling over the patient chair. This does on occasion produce excessive heat gain and an unusual view for the reclining patient when it rains heavily. There is a painting of wisteria on the ceiling, and the dental light is also fixed to the ceiling.

Treatment room four (11 m^2) is also a totally internal room which obtains daylight from the corridor skylight through two sliding frosted glass doors that allow entry into the room.

Support spaces

The preparation and sterilizing room adjacent to treatment room one is the main support for the facility. It processes dirty instruments by washing, ultrasonic cleaning and sterilizing them in an autoclave; this takes place in the dirty area. They are then stored in cupboards and placed on trays complete with some of the materials that will be required. The room has work surfaces on both long walls, cupboards above and sinks to wash instruments. It also stores the materials required to wrap instrument sets. The instrument packs and trays are carried or placed on trolleys to be moved to the appropriate treatment room. Instruments are not stored in the treatment rooms, to reduce contamination. The room also houses the daylight radiographic film processor. There is a lot of traffic in and out of the room when the practice is open.

The compressor and vacuum unit are housed in a lean-to shed in the courtyard. The shed has been soundproofed and insulated so that the equipment can function without disturbing the neighbours and can survive winter temperatures.

Radiography

All four treatment rooms have wall-mounted intra-oral radiography units and movable film viewers placed on the work surfaces. The films are processed in a daylight processor in the sterilizing room.

Administration spaces

There are two offices, one used by the principal dentist and the other for practice management. When a patient requests confidentiality at reception they may be seen in the consulting room if it is free or in the practice management office.

Staff spaces

There is a staff WC which is also used as a cloakroom. There is a small staff kitchen in a room that can also be used to store materials. Staff meetings are held in the consultation room.

Storage spaces

There are a number of storage areas, the main one being between treatment rooms three and four. The clinical waste and spent processor chemicals are stored there and are collected every two days. This storeroom has a door onto a passageway from which the collections can be made without disturbing the work of the practice.

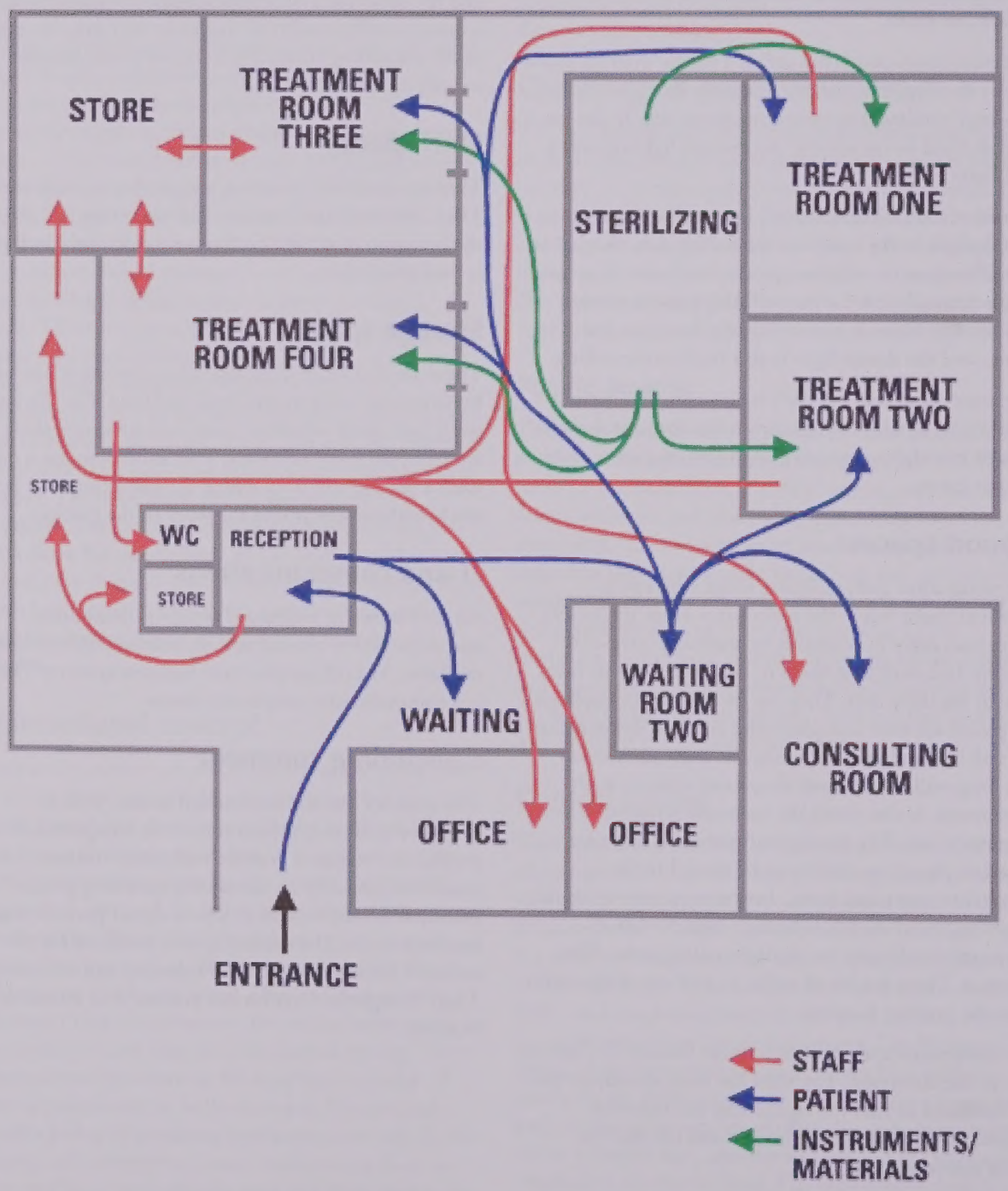
IT and communications

All the treatment rooms are wired for computers, and some have a clinical patient management system available. The offices also have business systems. There is a comprehensive telephone system.

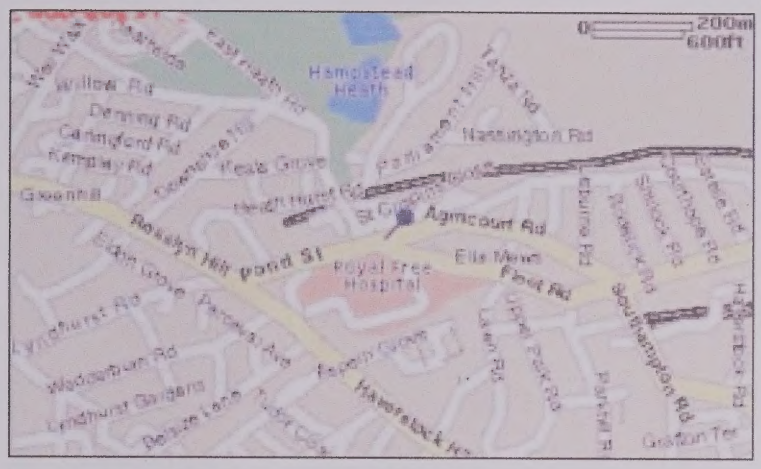
Concluding comment

This practice has almost doubled in size, with an extension and reorganisation recently completed. It has produced a compact practice with small treatment rooms made functional by an innovative operating policy. The principal dentist's vision of how a dental practice should function in the 21st century posed problems for the architect involved in the refurbishment and extension. Their thoughtful solution has produced an attractive practice.

HAMPSTEAD HEALTH CARE, LONDON



Location map



The practice

Two monitors in a treatment room, one for patient education material and the other for broadcast television

The preparation room. Note the storage cupboards and work surfaces – one side is the clean area and the other the dirty area

A treatment room. Note the clean, uncluttered work surface

Ringley Park Dental Practice, Reigate

Location, site, context

This purpose-built, nine treatment room dental practice is located on a busy main road which is also a bus route. The building was opened in 1991. It is set back from the main road and is reached via a short private road. The building is set at a lower level than the car park, and the entrance and ground floor are 1.7 m below the car park level. The car park has 40 spaces for patients and staff. The nearest railway station is a short taxi ride away. The practice sees approximately 20,000 patients a year. The practice now sees patients only under private contract. The building and car park are set in landscaped gardens. There are nine dentists and four hygienists, most of whom are part-time. There is a full complement of dental nurses, receptionists and practice management staff. The building has been designed for the needs of those with a disability, with ramps into the building and a lift for easy access to the first floor.

Organisational concept

The dentists operate semi-autonomously within the overall practice. Some dentists act as general dentists while others spend some or all of their time in the practice seeing patients referred from within the practice for specialist care. Some patients attend the practice only for specialist care. Patients arrive, record their arrival at reception and are directed to the appropriate waiting room on either the ground or first floor. The relevant dentist, dental nurse or dental hygienist collects the patient from the waiting room, and on completion of their care, escorts them back to reception for appointments and account matters. As each dentist acts as an individual practice within the overall envelope of the whole building, the support services such as reception, the hygienists and extra-oral radiography are provided by the practice owner. Patient records are kept centrally in a secure area behind the reception desk.

Comment on patient experience

Patients attend the practice primarily because they have expectations of a high quality of dental care. This is reinforced by the whole experience, from their arrival to their departure. The reception is quiet and not crowded, the waiting rooms are comfortable, and there is no noise pollution from the treatment rooms. The location of the waiting rooms prevents patients from seeing any movement within the corridors. Each external window has a view of a bank of plants or another feature of the landscaped gardens.

Public spaces

The reception is in the centre of the entrance area and is large enough for patients to discuss their affairs while allowing the area to be used as a passageway from the stairs to the ground-floor facilities. However, the open area does mean that confidentiality can be difficult, and patients are taken to an office if necessary. Despite the size of the practice the reception is not busy, as patient arrivals and departures are staggered. The reception is fully computerised. There are some dentally-related products available for sale through the reception. The reception has a full view of the entrance and, as the reception desk is designed for standing patients, the receptionists assist in door opening and also carry out any necessary administration for those who have difficulty. There are two waiting rooms, one on each floor, and they are similar in design. Each is positioned at the far end of the corridor and has settees and individual chairs to seat a total of nine. Refreshments are available, and there is a side table and a children's activity centre. The overall effect is of a sitting-room, but the seating is all low and not suitable for those with disabilities or back-pain sufferers. The corridors and waiting rooms are carpeted. There are WCs nearby. Patient access to the first floor is via stairs at reception and by the lift situated in the corridor.

Clinical spaces

There are nine treatment rooms, two for hygienists and seven for dentists. The two hygienists' treatment rooms are the same size (12 m^2) but are equipped differently; however, they both have a "brushing" unit with sinks and mirror.

Six of the dentists' treatment rooms are all the same size (18.5 m^2) but the seventh is slightly smaller (16 m^2). They are all fitted out with different equipment and in different styles. They all have intra-oral radiography units, some digital, and radiograph film viewers within the treatment room or a computer screen to view digital radiographs. They all have some form of desk unit for patient consultations, either separate from or built into the cabinetry. They are all computerised and equipped with ultrasonic instrument cleaners and autoclaves; instrument storage is within the rooms. As they operate as separate treatment rooms they all have their own storage space for materials. Each room is set up to the individual requirements of the dentists. Some are sparsely furnished with lots of space, others have floor-to-ceiling cupboards and extensive cabinetry and work surfaces. Some have divided the space into clinical and non-clinical space. The latter is carpeted in some rooms. They all have vinyl flooring in the clinical areas and some type of fluorescent lighting either on its own or combined with spotlights or uplighters. Three rooms have an intra-oral camera and one treatment room has a microscope for endodontic practice. The ground-floor treatment rooms have bigger windows than those on the first floor. The first-floor windows are smaller and at floor level; there are no window sills in the first-floor rooms.

Support spaces

There is a small recovery room on the ground floor for patients who have undergone sedation. The compressor and vacuum systems are housed within the practice on the ground floor and there is no central amalgam separation provision.

Radiography

As all the dentists' treatment rooms have their own intra-oral radiography units there is little need for a central unit; however, there is one machine that can be used as a back-up. It is normally used for extra-oral radiographs. There is a cephalostat unit and an orthopantomogram (OPG) unit. There is a daylight film processing unit for both small and large films near the extra-oral units. Radiographic films are stored in the patient's record or on a computer specially for the digital radiographs. Currently this is a separate system for each treatment room using digital radiography, but this may be integrated into the clinical system in the future.

Administration spaces

There is a small office for the practice manager to work in, and some administration space in the area behind the reception desk.

Staff spaces

There are two staff rooms on the first floor, one for dentists and one for the other staff. The dentist's room has some journals and books, and doubles as a small library and reading room. The other staff room has a kitchen and a dining table as well as comfortable seats. There are staff lockers in the staff rooms and a staff WC nearby. Staff meetings and training are held in the waiting rooms. Dentists' and management meetings are held in the library.

Storage spaces

Clinical waste is stored in the treatment rooms and then moved to a secure shed within the grounds from where it is collected. Domestic waste is also stored in the grounds. As each treatment room acts as a separate practice, storage of materials and equipment is in each room. There is a small model box store in the X-ray room, but most are kept in the individual treatment rooms.

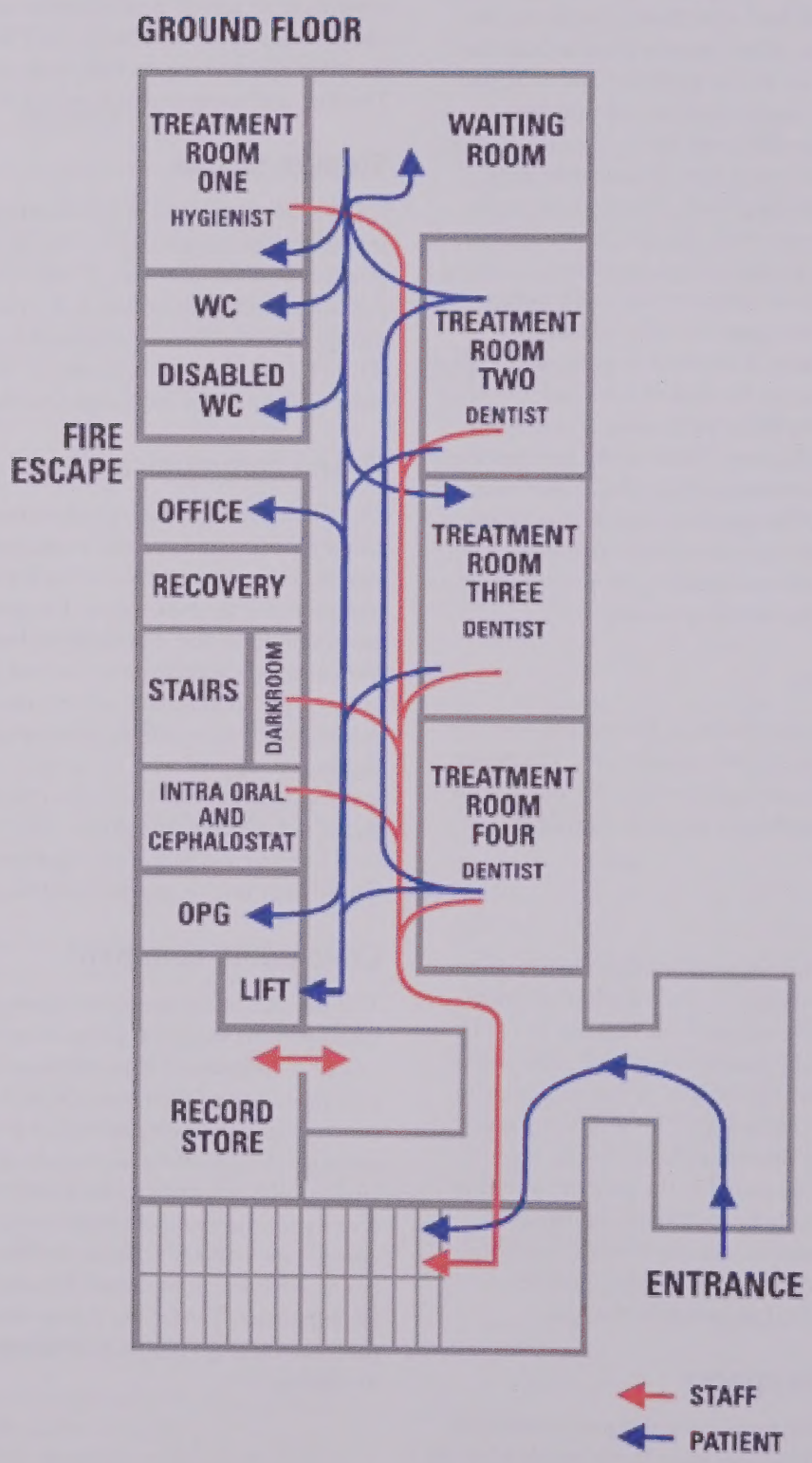
IT and communications

The whole practice is equipped with an integrated clinical, patient and practice management computer system. There are terminals in each treatment room, reception and the office areas. The system is used for communication and is available to both dentists and hygienists. It is used by most but not all dentists; some only use the appointment system, others use the whole system, while some still use paper records. The office system is integrated with the clinical system. Some treatment rooms have their own computers linked to the digital radiography equipment, and even the dental units have integrated display units. One treatment room has a CAD-CAM unit to produce crowns and inlays.

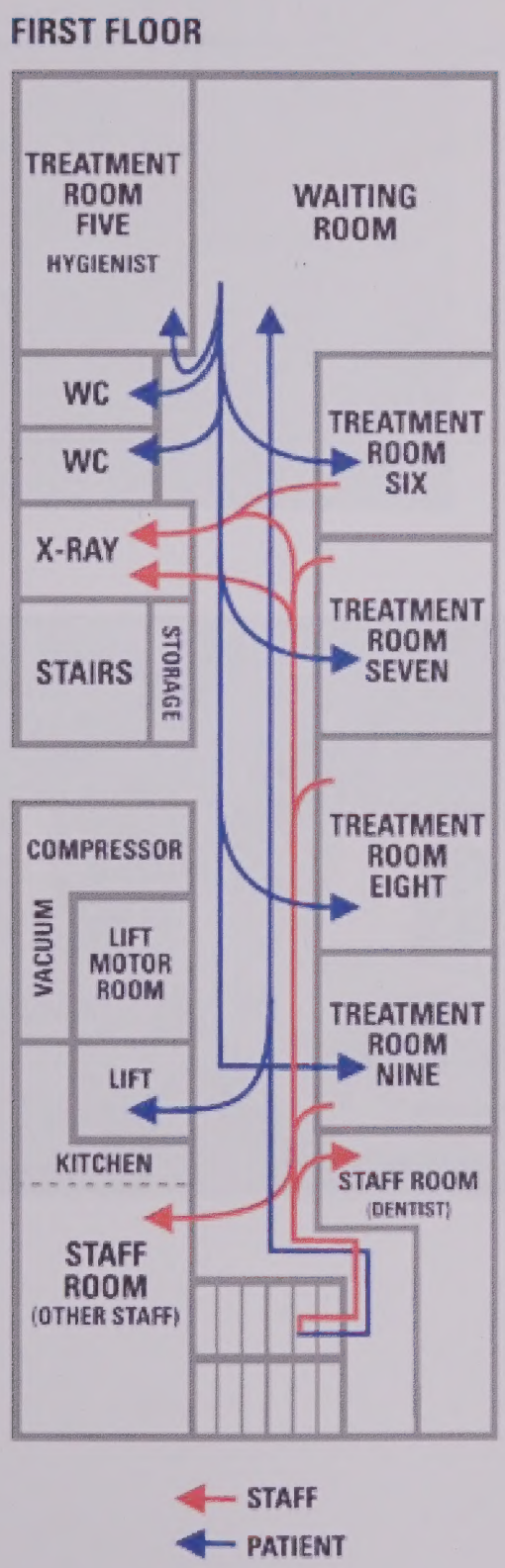
Concluding comment

This practice has a calm, quiet atmosphere and is patient-friendly in the sense that patients are made welcome and treated as individuals. The individual dentists have their own practices and their own special interests, and although there are some internal referrals, most patients stay with their dentist and see only that treatment room (and possibly the hygienists), so have no concept of the diversity of the treatment room designs. The practice will upgrade the staff and training facilities in the near future, but each treatment room will plan and programme its own upgrades. The facility is large and has a large car park, but has been placed in a hollow so as to minimise its apparent size.

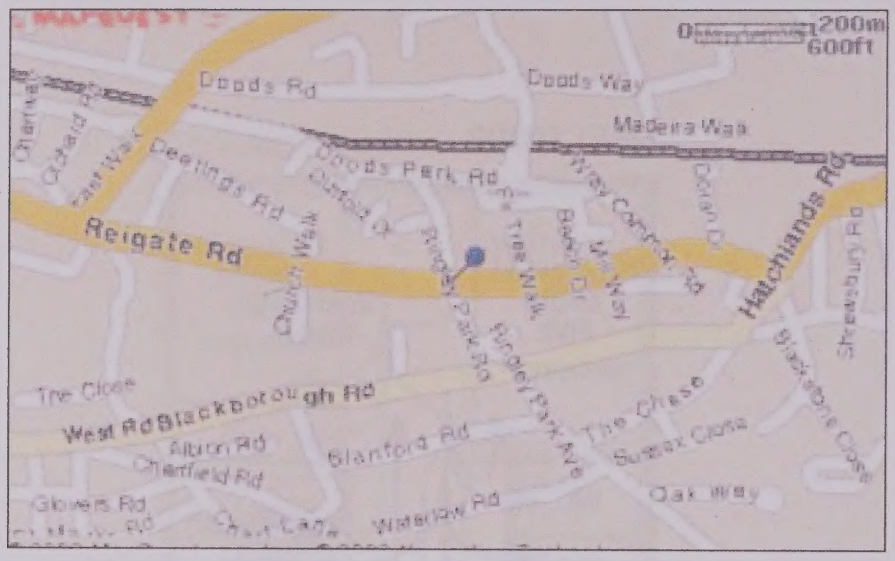
RINGLEY PARK DENTAL PRACTICE, REIGATE



RINGLEY PARK DENTAL PRACTICE, REIGATE



Location map

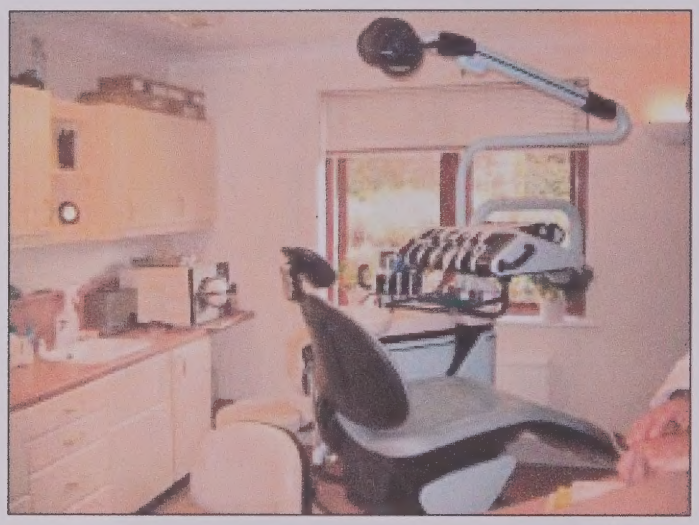


The practice

The children's activity centre in the waiting room

The ground-floor waiting room

A treatment room with over-the-patient delivery of the instruments



A treatment room with a black and white theme

Southview Dental Practice, Edenbridge

Location, site, context

This single-storey, purpose-built, four treatment room practice is in a large landscaped area behind a large medical primary care facility. There is a car park, and the land surrounding the building is a pleasant garden. It is situated near the town station and opposite a sports centre, with a large car park within easy walking distance. There is a bus service to the vicinity of the practice. The building was originally designed and built in the 1960s and some additions have been completed since then. The practice consists of three full-time dentists, one a vocational trainee, and a hygienist who attends three sessions a week. It provides dental care under both NHS and private contract and has approximately 23,000 patients. There is a receptionist, a practice manager and three dental nurses.

Organisational concept

The entrance has two steps and no ramp for wheelchair access. When patients enter the lobby area they are not visible to the receptionist. There is an open-door policy, and regular patients know where the reception desk is. Once patients are recorded as present, they proceed to the waiting room from where they are called by either a dental nurse or the receptionist to enter the treatment room. There is only confidentiality at the reception if there is no other patient present, although patients can be taken to the orthopantomogram (OPG) room, which also doubles as a small sitting-room. Patient records are stored in filing cabinets in the reception/office.

Comment on patient experience

Patients see an efficient, modern practice with modern treatment rooms and a convenient locality, although further signage could be added in order to improve wayfinding to the practice. The public rooms are bright and clean. They are not exposed to excess marketing and have only limited educational material.

Public spaces

The lobby is well lit and is a bright but calm area. It is the hub of the practice – the staff and patients all use it, as all four treatment rooms open off it, as do the two patient WCs. The receptionist can see the lobby but not the entrance. The waiting room has ten seats and is air-conditioned. There is a small rack of educational material but no marketing. The waiting-room lighting is a combination of side- and uplighters, which are sometimes inadequate when days are short. There is a window onto the car park. There are substantial green plants, and artwork on the walls.

Clinical spaces

Treatment room one (18 m^2) is used by the vocational trainee. It has L-shaped cabinetry, and the dental unit is on the diagonal facing the door from the lobby. The dynamic instruments are on a mobile cart, but the suction tubes are fixed on the cabinetry and are short; there is no spittoon, and patients rinse out in the nearby sink. The dental light and the radiography unit are fixed to the rear wall. The floor is carpeted, with a vinyl square under the dental chair. There are spotlights in the ceiling. There is a small autoclave and ultrasonic cleaning bath. There is no separation of clean and dirty instruments.

Treatment room two (18 m^2) is used by a dentist. There is L-shaped cabinetry, with a short arm behind the patient and a long arm on the nurse's side. The door into the treatment room is behind the patient. The dynamic instruments are on a mobile cart, and the dental light and the radiography unit are wall-mounted behind the patient. There is an autoclave and an ultrasonic cleaner. The room is air-conditioned. The lighting is a mixture of fluorescent and spots. The dentist has a desk by the picture window.

Treatment room three (20.5 m^2) is used by a left-handed dentist. It has U-shaped cabinetry, with the long arm on the nurse's side and the short arm on the dentist's side. The dentist sits to the left of the patient's head. The cabinetry makes a functional corridor leading the patient in to the dental chair. The door into the treatment room is behind the patient. The dynamic instruments and

suction are built into the cabinetry. The dental light and the radiography unit are wall-mounted. There is a television monitor suspended from the ceiling within the eyeline of a reclining patient; it can show broadcast television or videos. There is also a map of the world fixed to the ceiling over the patient as a distraction. A painting on the wall facing the patient has a false perspective that extends the apparent length of the treatment room. An Ikea storage unit that folds closed when not in use completes the fixtures. There is a U-shaped fluorescent unit on the ceiling over the work surfaces, supplemented by ceiling-mounted spotlights. The floor is covered with vinyl tiles. The room has two large windows looking out onto the trees in the garden.

Treatment room four (18 m^2) is used by the hygienist. It has cabinetry and work surfaces along three walls and the dental chair is not central, being nearer the window side, and is slanted to make it easier for the operator to reach the dynamic instruments and suction, which are fixed to the cabinetry. The ceiling fluorescent light is also not central and is above neither the patient nor the work surfaces. There is an autoclave and an ultrasonic cleaner.

All four treatment rooms have several green plants in pots strategically placed on work surfaces and on the floor.

Radiography

Each treatment room has an intra-oral radiography unit, and the OPG unit is in a separate room that is also used as a small sitting-room. Processing for all radiographs is carried out in a nearby room that doubles as a storeroom and a darkroom.

Administration spaces

The office is part of the reception area. The small sitting-room can be used for confidential matters provided that the OPG unit is not in use.

Staff spaces

The staff room and kitchen are available for all to use. The compressor is sited in a cupboard in the kitchen, and during working hours the noise is intrusive. It is switched off at lunchtime.

Storage spaces

Clinical materials are stored in the cupboards in the kitchen and the storeroom. Clinical waste is stored in a secure bin in the garden, out of view of the treatment rooms. The domestic waste is also stored in the garden. Both can be removed without the need to access the treatment rooms.

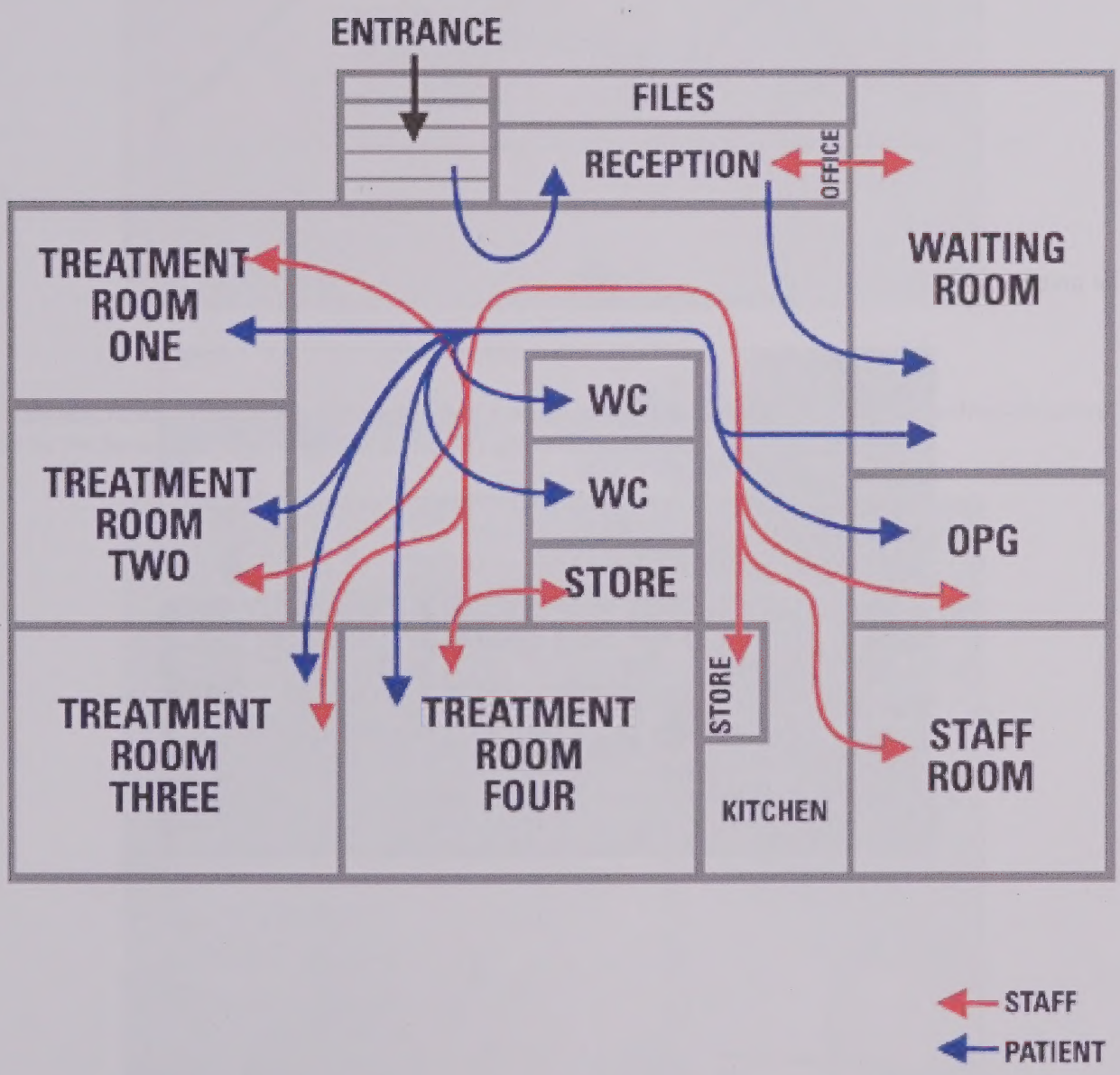
IT and communications

Two of the treatment rooms are equipped with intra-oral cameras, and all treatment rooms and the reception are linked to an integrated clinical and patient management system.

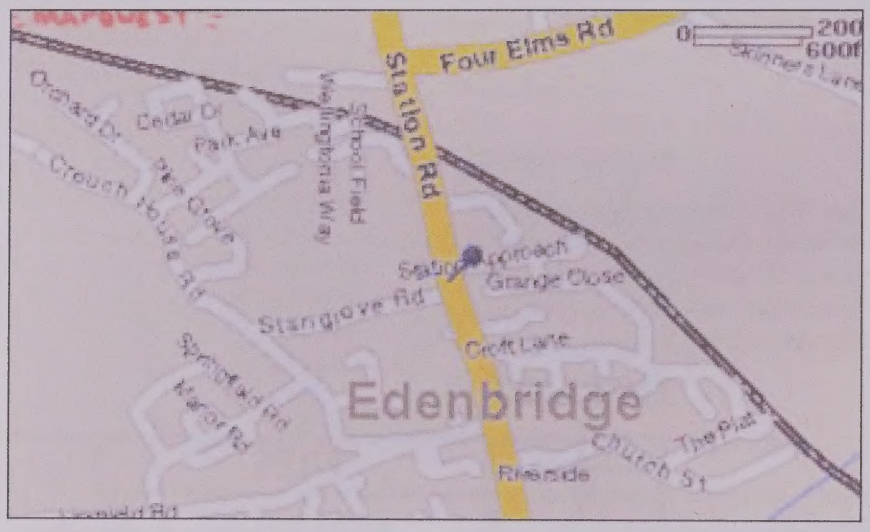
Concluding comment

This purpose-built practice has a diversity of treatment room designs, yet all work efficiently; the practice has a policy of constantly upgrading its facilities. The potential security problem created by the juxtaposition of the entrance and reception could be eased by the use of a discreet CCTV system.

SOUTHVIEW DENTAL PRACTICE, EDENBRIDGE

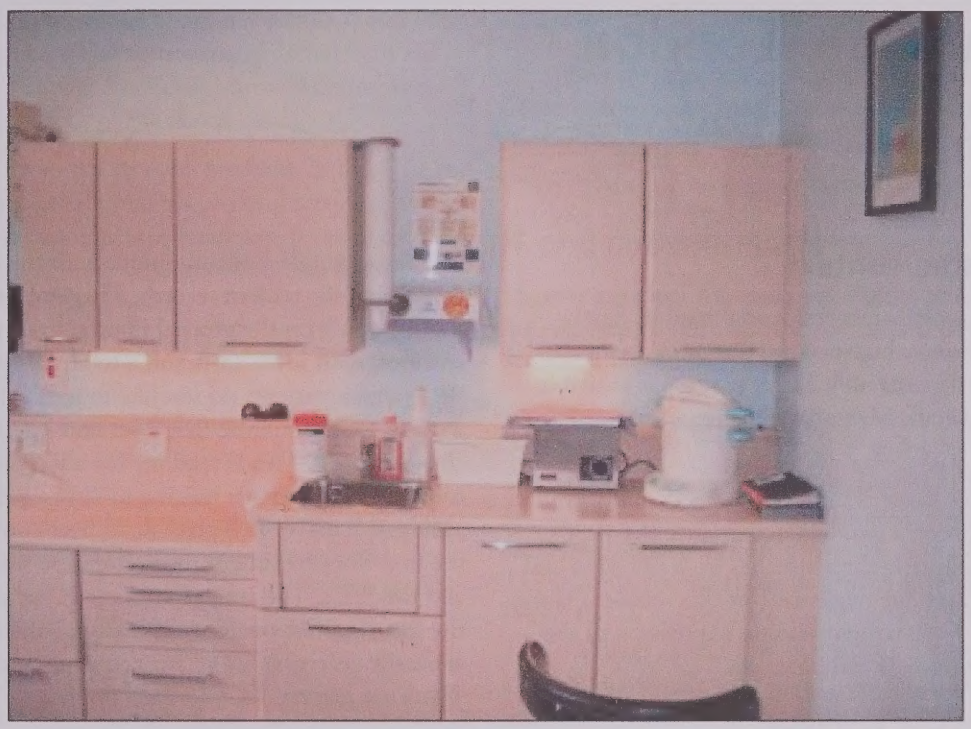


Location map



The practice

Detail of a treatment room – the sterilizing area with autoclave, ultrasonic bath and worktop lighting



A treatment room, with ceiling decoration and a perspective-teasing picture. Note the ceiling-mounted monitor for broadcast television and computer-generated material

The Avenue, London

Location, site, context

The practice is located in a residential road in East London, with nearby bus services. Car parking on the forecourt is for dentists only. Street parking is available for patients and staff. Many patients live within walking distance.

The practice sees patients under both NHS and private contract. It has been a family practice since the 1950s, and the staff comprises three dentists (two full-time and one part-time) and one hygienist (for one session a week). Approximately 1400 patients attend regularly, and the practice sees around 60 patients a day.

Organisational concept

Patients and companions arrive through the front door and register their arrival with the reception desk, from where they are directed to one of the waiting rooms, depending on which treatment room they are to be seen in. Patients are escorted by dental nurses for their treatment but make their own way to reception for payment and booking further appointments. Patients who have access difficulties are seen in the ground-floor treatment rooms.

Comment on patient experience

Patients like the locality and the friendly nature of the staff; however, the potential lack of confidentiality for patients created by the open-door policy can lead to patient unease. The lack of a barrier to the first-floor storeroom, which makes it easy for an unsupervised child to wander in, is a security and safety hazard. The general worn state of repair of the carpets and decoration gives a poor impression of what is, in fact, a caring practice.

Public spaces

The reception desk is off the hall just after the entrance lobby and has a small area in front of a high desk with sight of the office. There is privacy for transactions provided that other patients wait in the lobby. There is no direct line of sight to the front door. It is possible to gain entry to the facility without being seen by a receptionist.

The reception desk is contiguous with the office containing the patient records. There are two waiting rooms; one is on the ground floor at the end of a corridor, with seven seats and a totally internal unisex WC (which patients do not like to use). The second waiting room is on the first floor and has six seats and a children's area. This is used for the adjacent treatment room and for patients waiting to have a pan-oral radiograph taken. It is possible to hear conversations in the first-floor treatment room from the waiting room and the WCs. The storage area and X-ray processor on the first floor are open to the landing, and the contents are easily accessible by all who come up the stairs. There are patient WCs on each floor.

Clinical spaces

Treatment room one (18 m^2) has a vinyl floor around the operating area and carpet in the internal passageway that has been created by the horseshoe-shaped cabinetry to lead the patient into the operating area. The lighting is ceiling-mounted fluorescents, and there is a ceiling-mounted fan to create air movement. The bay window is used as a store area and also contains a portable air-conditioner. The dental equipment is at least ten years old and is still fully functional. The dynamic instruments are mounted on an arm from the cabinetry to the right of the patient's head. Suction is fixed to the work surface on the dental nurse's side, as is the radiographic unit. The spittoon and dental light are both mounted on the chair facing the bay window. Patients enter the treatment room from the rear.

Treatment room two (14.4 m^2) contains some old dental equipment but is currently used as a storeroom. It has a window that looks into the conservatory that acts as the office for staff. This will compromise confidentiality if it is used as a treatment room in the future.

Treatment room three (12 m^2) has a vinyl floor covering with the patient couch facing towards the entrance door and away from the window. The lighting is ceiling-mounted fluorescents and there is a portable air-conditioning unit. The dental equipment is more than ten years old and still functions. The dynamic

instruments are mounted on a mobile cart at the dentist's side. There is a room-length work surface on the dental nurse's side which houses the computer terminal and the sterilizing equipment. The spittoon and dental light are chair-mounted. Patients enter the treatment room from the side nearest the foot of the dental chair.

Each treatment room has its own autoclave but no ultrasonic pre-wash baths and no physical separation of clean and dirty instruments. In treatment room three instruments are washed in the same sink used by both the dentist and the dental nurse.

Radiography

Each treatment room has a conventional wall-mounted intra-oral machine and there is a pan-oral machine in a room on the first floor which is also used as a storeroom. The film processor is in the open storage area on the first floor. All films are stored in patients' paper records.

Administration spaces

The office attached to the reception desk deals with patient matters, while the practice manager and the staff use the conservatory as an office.

Staff spaces

There are kitchen facilities in the passageway leading to the conservatory, and part of the conservatory is used as a staff area.

Storage spaces

Instruments and clinical materials are stored in the treatment rooms, with stock materials and water stored in the open storage area. Clinical and domestic waste are stored in the treatment room, then moved to the first-floor storeroom and finally to the garden shed for collection.

IT and communications

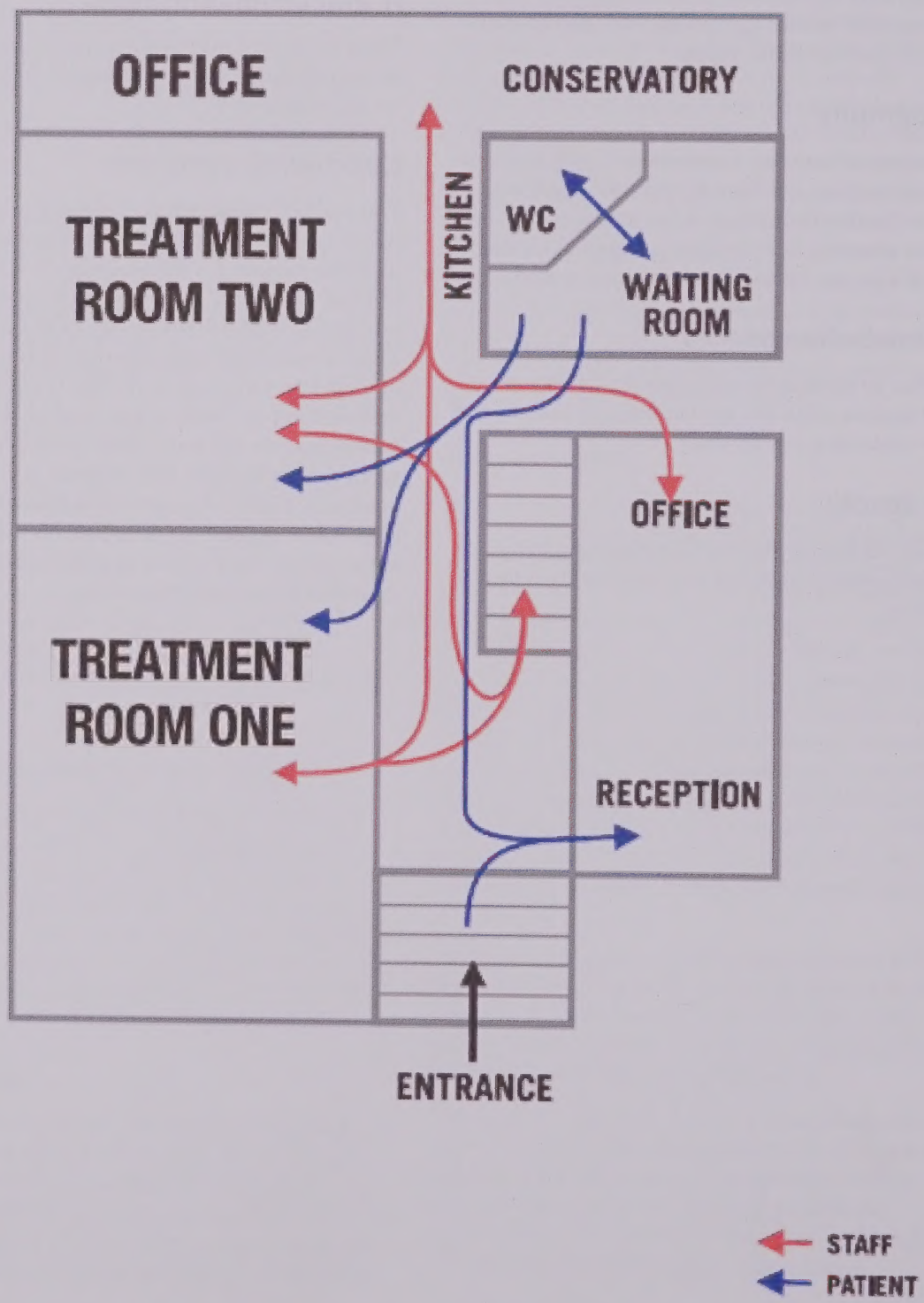
There is a patient management system in reception and the two operating treatment rooms, but patient records are still paper-based.

Concluding comment

This is a well-established family dental practice that exhibits some of the problems associated with the use of domestic property for the provision of dental services. The space has been used to its maximum and the extensions to the building make the practice effective. There is spare capacity, as one treatment room is under-utilised, but it will need to be fully re-equipped. The increased patient numbers generated by the extra treatment room will put a strain on the ground-floor waiting room facilities. Although the patients treat the practice as a "club", the open storage area on the first floor is an invitation to young patients to explore a section of the building that non-authorised individuals should be prevented from entering.

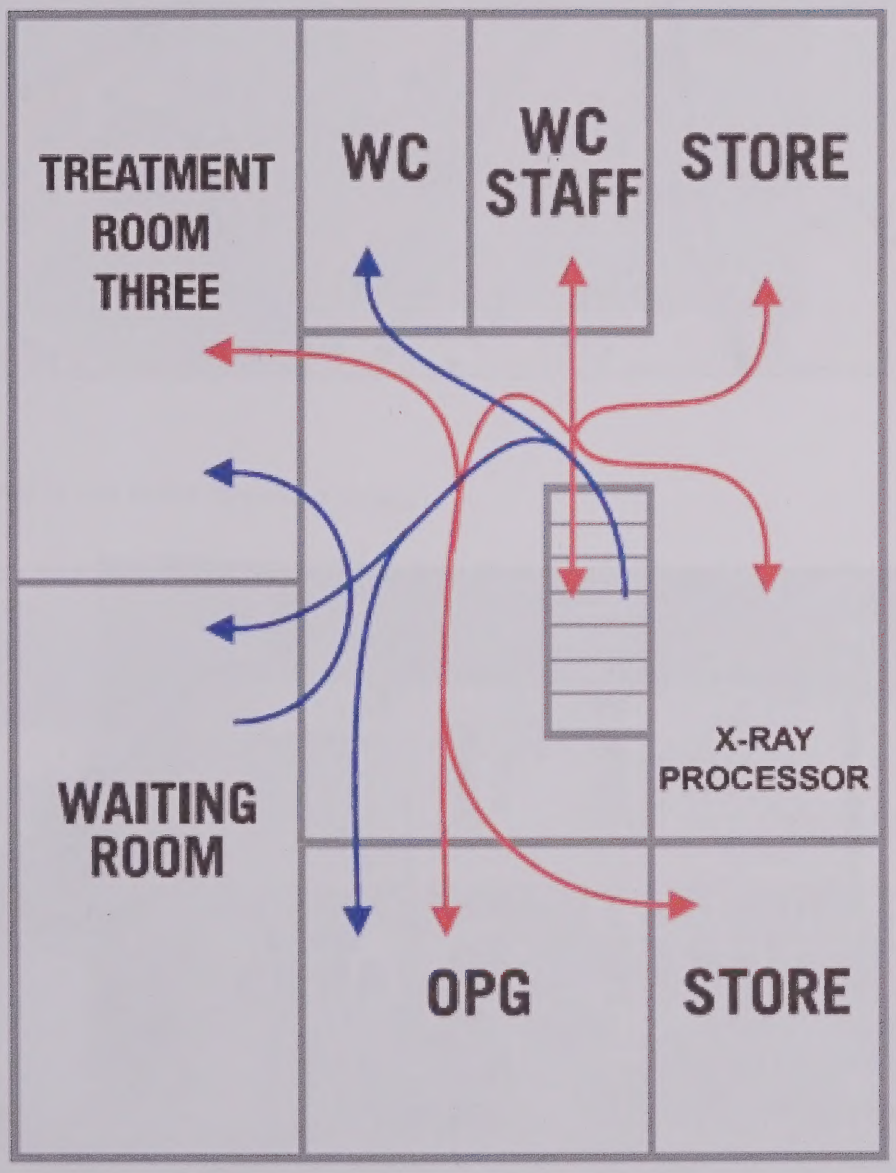
THE AVENUE, LONDON

GROUND FLOOR



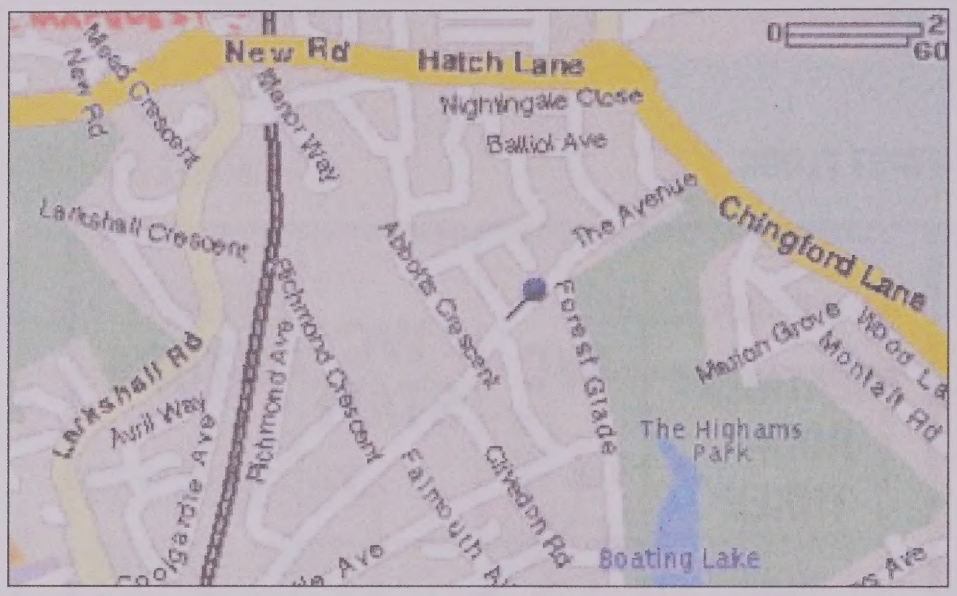
THE AVENUE, LONDON

FIRST FLOOR



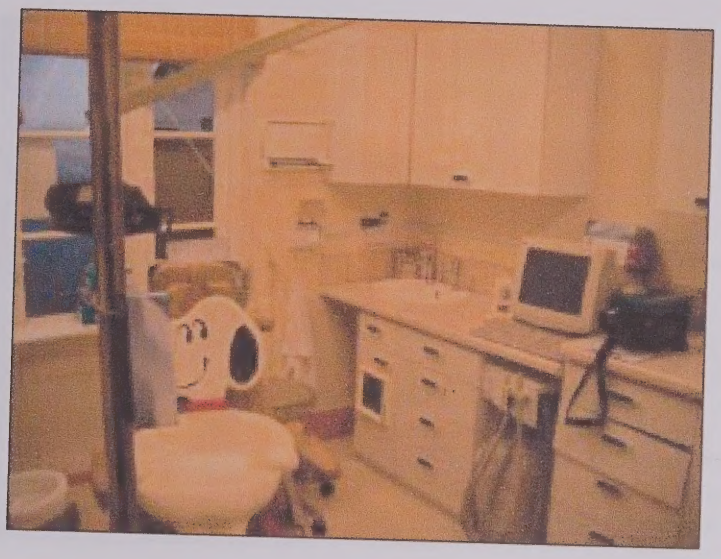
STAFF
PATIENT

Location map

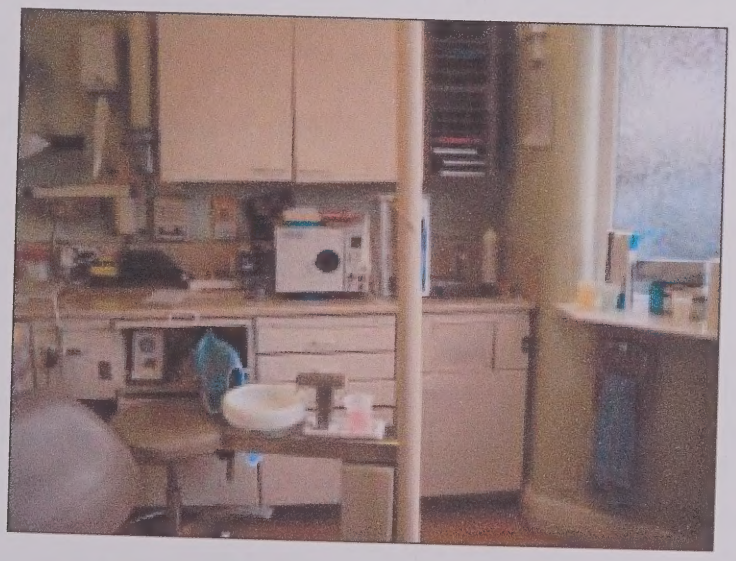


The practice

A treatment room



The sterilizing area in one of the treatment rooms



An OPG radiographic unit in a room also used as a sitting-room and a storage area

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